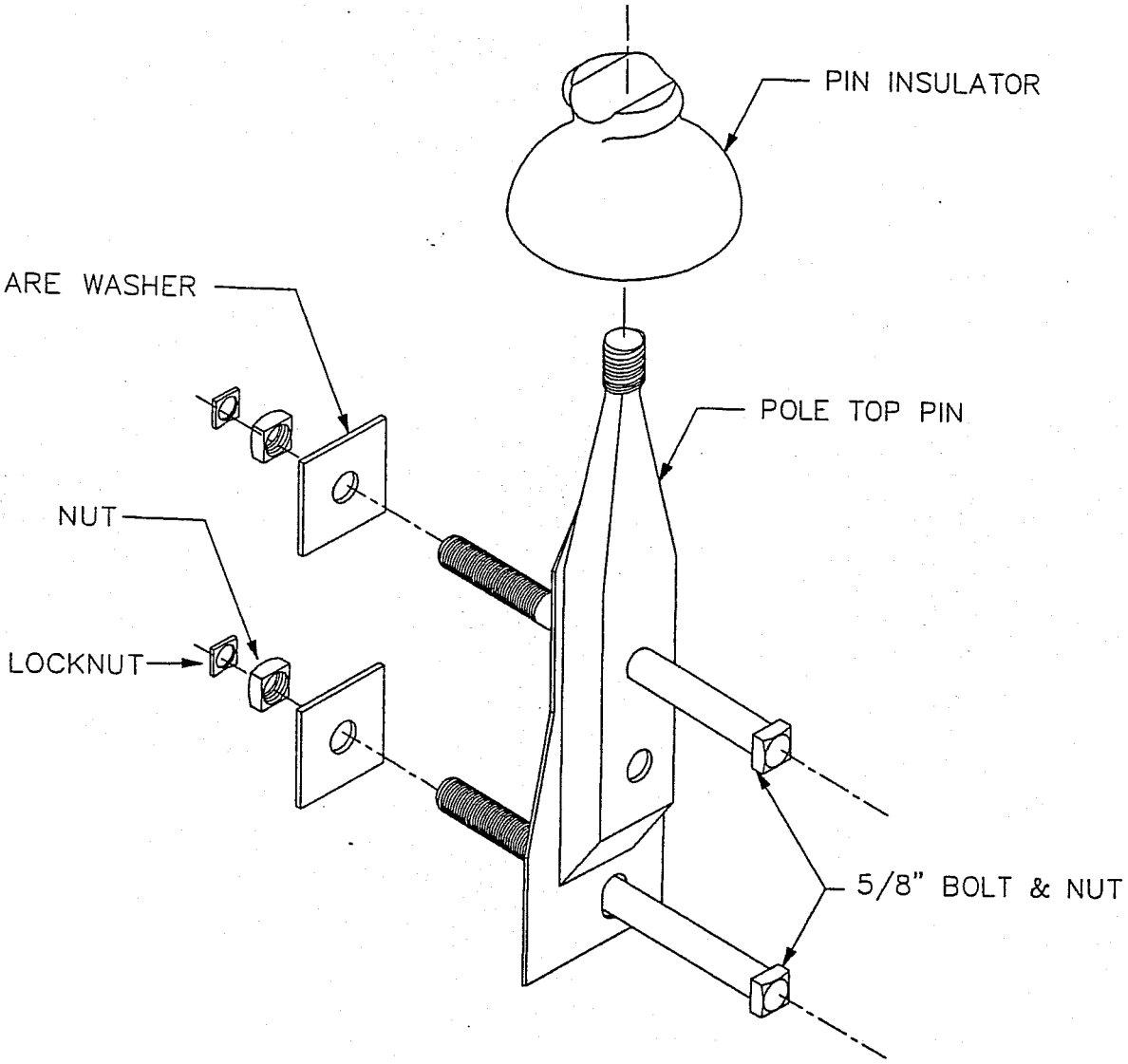
SINGLE PHASE ASSEMBLIES

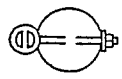
OTES:

1. MAXIMUM LINE ANGLE IS 10° FOR 397 ACSR & 750 AAC.
2. MAXIMUM LINE ANGLE IS 20° FOR 1/0 ACSR & 1/0 AAC.
3. IF NO FORMED WIRE TIE FOR ALUMINUM CONDUCTOR IS AVAILABLE USE LINE GUARD AND TIE WIRE.
4. COPPER CONDUCTOR–NO FORMED WIRE TIE IS AVAILABLE. DO NOT USE ALUMINUM FORMED WIRE TIES ON COPPER CONDUCTORS, USE COPPER TIE WIRE.

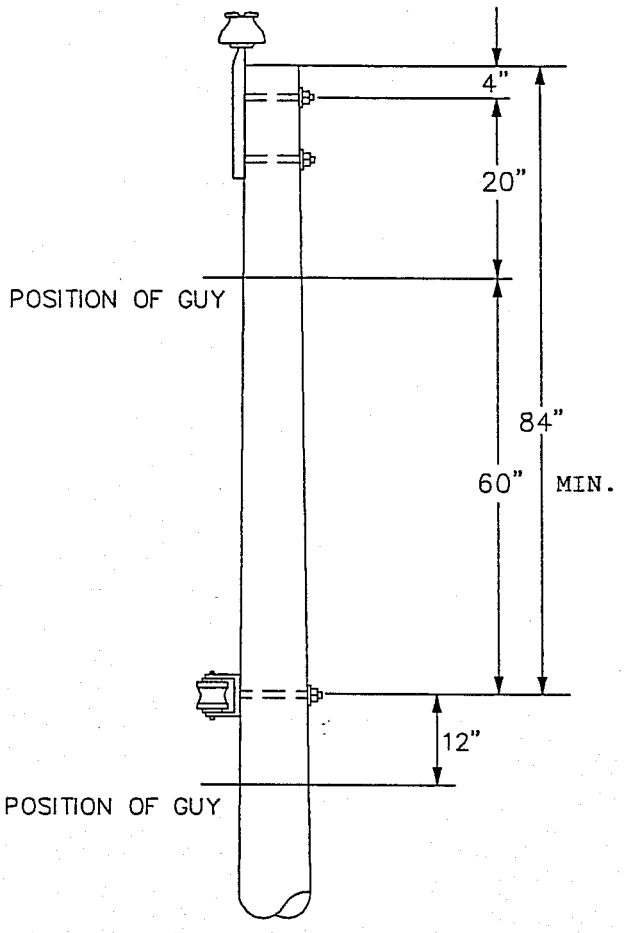


DETAIL POLE TOP PIN CONDUCTOR TIE

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		11.07



TOP VIEW



MAX. SPAN – 500'
0° – 6°

STANDARD CONFIGURATION
STRAIGHT LINE CONSTRUCTION

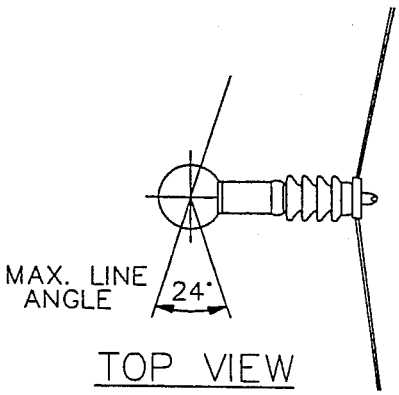
A1

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		1.01

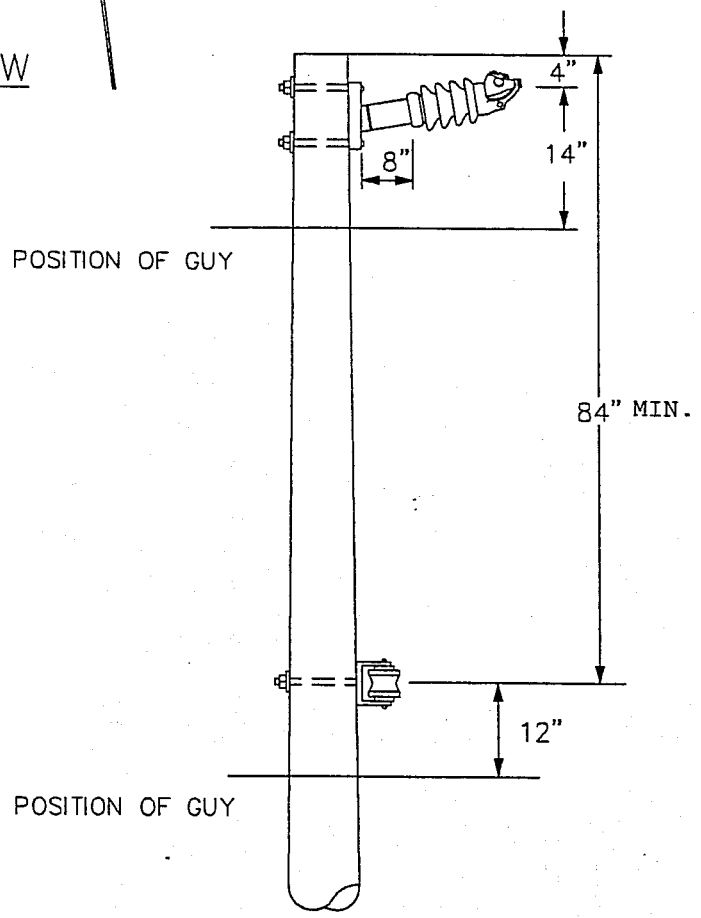
CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
STANDARD CONFIGURATION
STRAIGHT LINE CONSTRUCTION

A1

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	1		INSULATOR, PIN	
	1		PIN, POLE TOP	
	3		WASHER, SQUARE, 2 1/2" X 2 1/2"	
	3		BOLT, MACHINE, 5/8" AT REQUIRED LENGTH	
	1		CLEVIS, SECONDARY	
	1		INSULATOR, SPOOL	
	3		NUT, LOCK 5/8"	



TOP VIEW



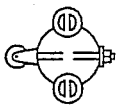
6°–24°
STANDARD CONFIGURATION
MEDIUM LINE ANGLE CONSTRUCTION

A1PA

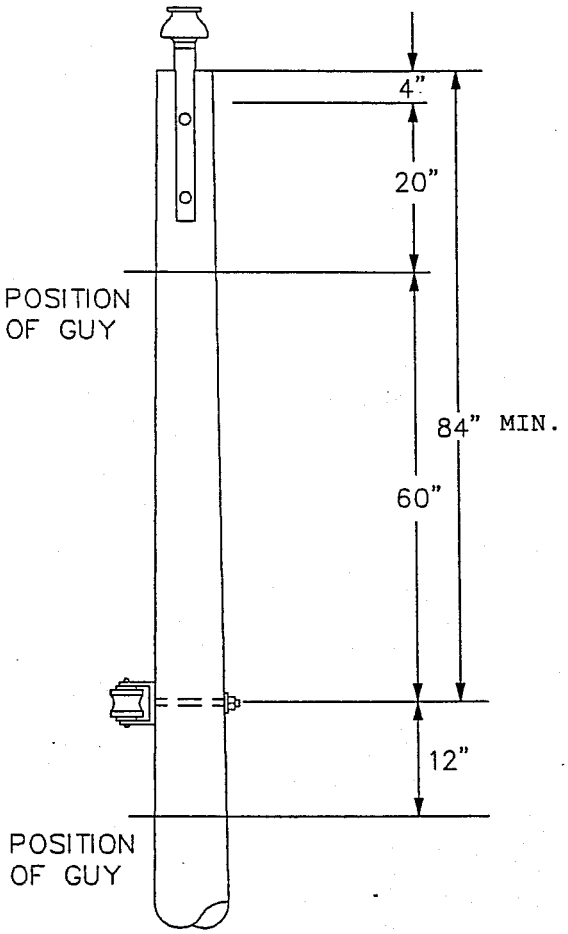
VER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		1.02

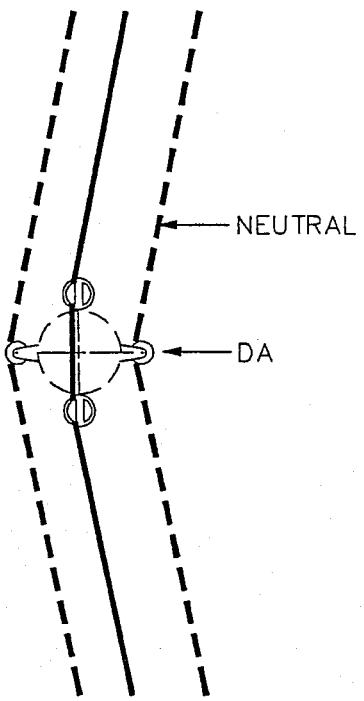
CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
STANDARD CONFIGURATION
MEDIUM LINE ANGLE CONSTRUCTION
A1PA

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	1		BRACKET, INSULATOR	
	1		INSULATOR, POST TYPE HORIZONTAL	
	3		WASHER, SQUARE, 2 1/2" X 2 1/2"	
	1		INSULATOR, SPOOL	
	1		CLEVIS, SECONDARY	
	3		BOLT, MACHINE, AT REQUIRED LENGTH	
	1		INSULATOR, CLAMP, SIZE AS REQUIRED	
	1		STUD, MOUNTING F/POST INSULATOR	
	3		NUT, LOCK 5/8"	



TOP VIEW





PLAN

MAX. SPAN – 500'
0° – 6°

STANDARD CONFIGURATION
SINGLE PHASE, DOUBLE PRIMARY SUPPORTS

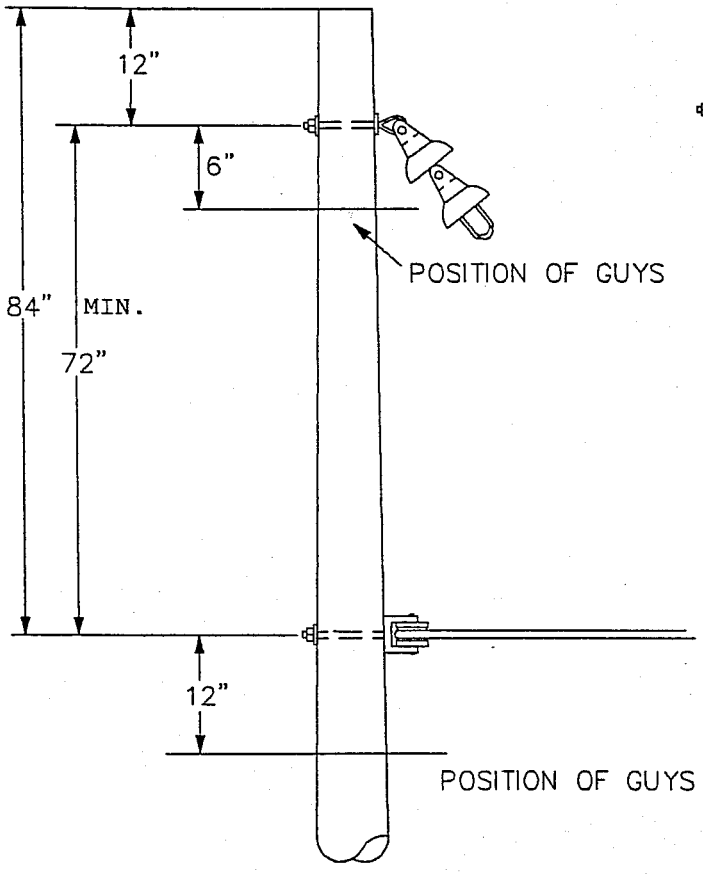
A2

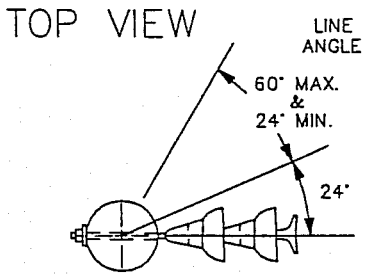
ɔWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS _____	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		1.03

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
STANDARD CONFIGURATION
SINGLE PHASE, DOUBLE PRIMARY SUPPORTS

A2

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	2		INSULATOR, PIN	
	2		PIN, POLE TOP	
	1		WASHER, SQUARE, 2 1/2" X 2 1/2"	
	3		BOLT, MACHINE, 5/8" AT REQUIRED LENGTH	
	1		CLEVIS, SECONDARY	
	1		INSULATOR, SPOOL	





MAX. SPAN – 500'
24° – 60°

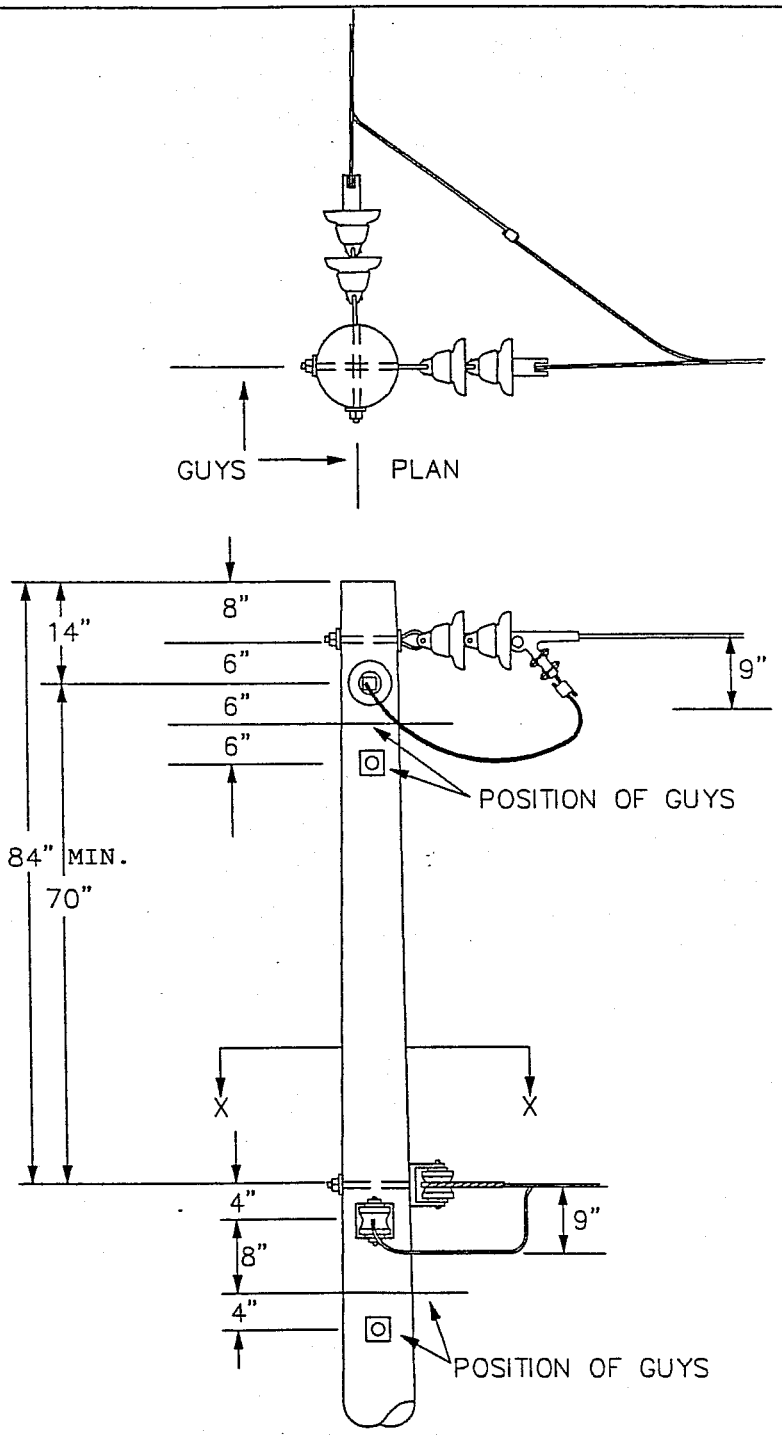
STANDARD CONFIGURATION
VERTICAL SUSPENSION ANGLE

A3

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		1.04

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
STANDARD CONFIGURATION
VERTICAL SUSPENSION ANGLE
A3

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	2		INSULATOR, SUSPENSION	
	3		WASHERS, SQUARE, 2 1/2" X 2 1/2"	
	1		INSULATOR, SPOOL	
	1		CLEVIS, SECONDARY	
	1		CLAMP, SUSPENSION, SIZE AS REQUIRED	
	1		BOLT, MACHINE, 5/8" AT REQUIRED LENGTH	
	1		BOLT, EYE, SIZE AS REQUIRED	
	1		SHACKLE, 90° TWIST	



SINGLE PHASE SUSPENSION

A4

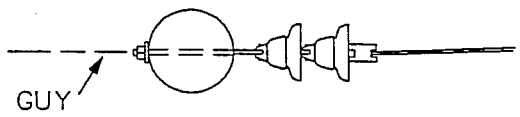
POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		1.05

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES

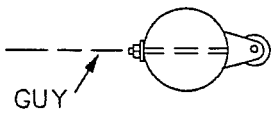
SINGLE PHASE SUSPENSION

A4

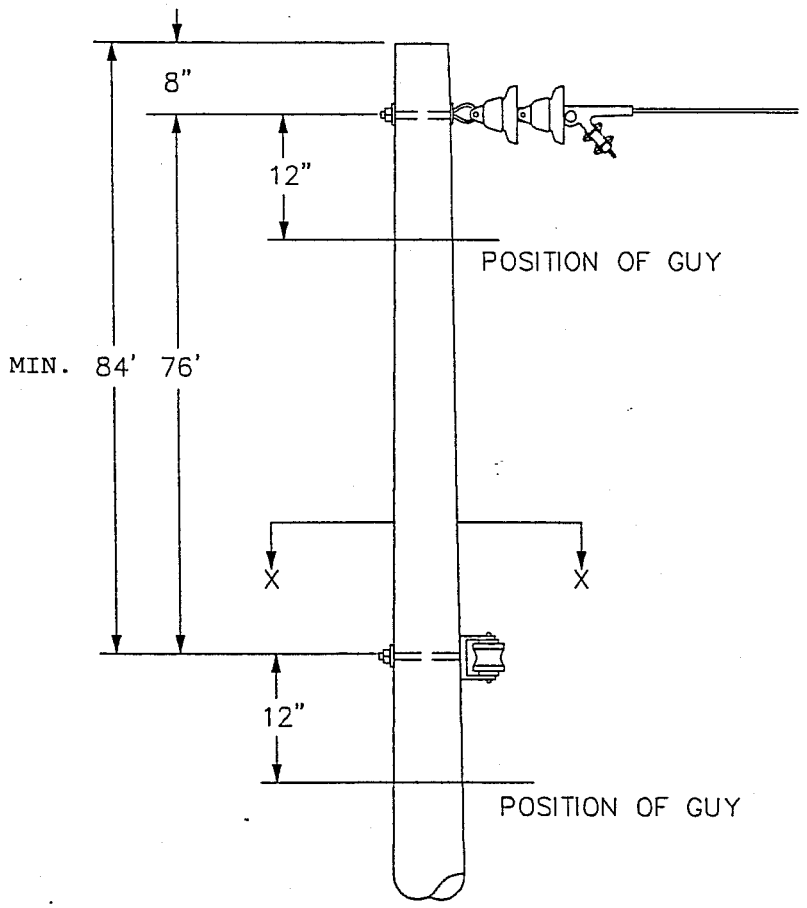
ITEM	QUANTITY	STOCK NO.	MATERIAL	
	2		CLEVIS, SECONDARY	
	2		DEADEND ASSEMBLY, PRIMARY	
	2		INSULATOR, SPOOL	
	6		WASHER, SQUARE 2 1/2" X 2 1/2"	
	2		BOLT, MACHINE AT REQUIRED LENGTH	
	4		INSULATOR, SUSPENSION	
	2		BOLT, EYE, 5/8" AT REQUIRED LENGTH	
	4		NUT, LOCK 5/8"	



TOP VIEW



SECTION X – X



SINGLE PHASE, DEADEND

A5

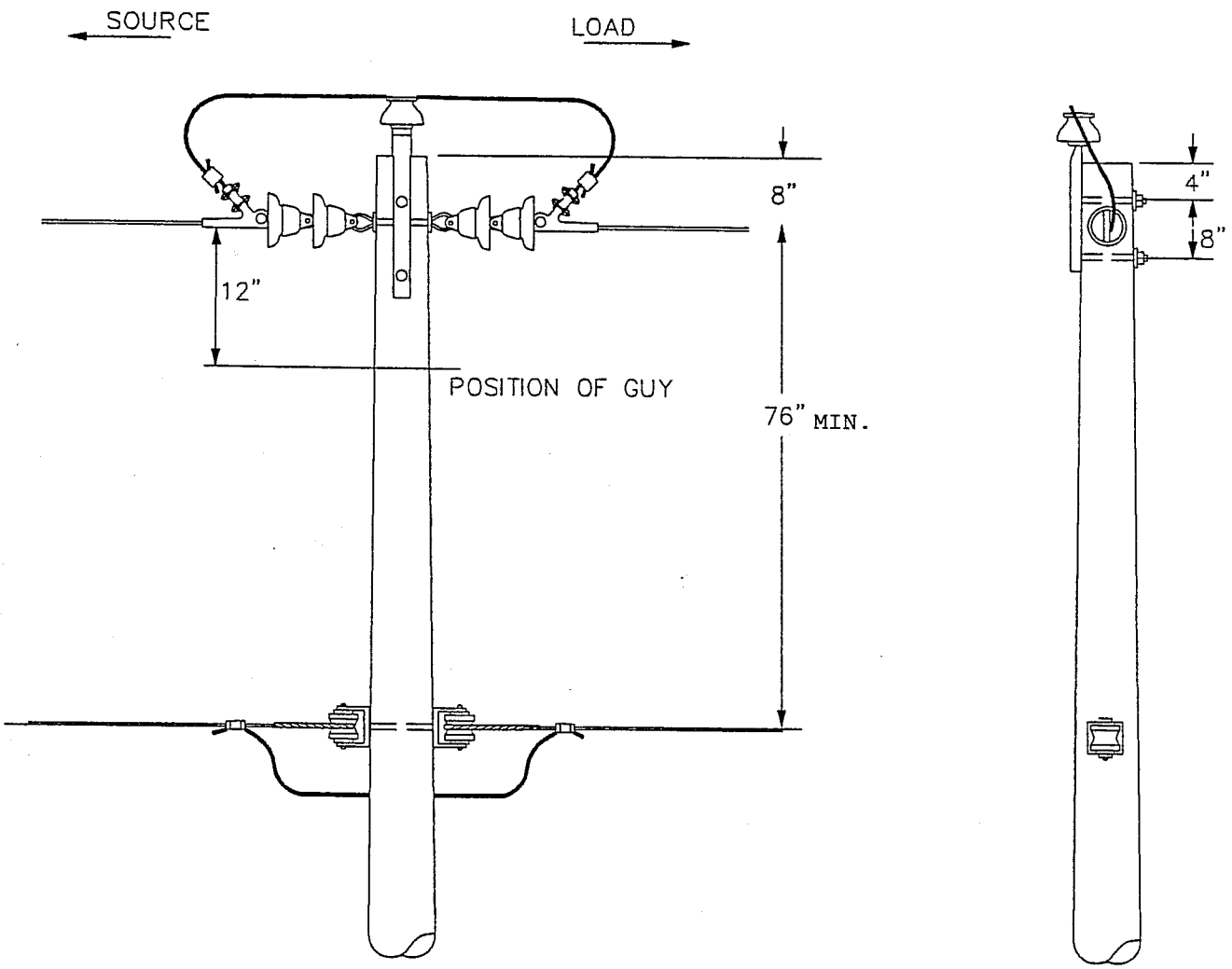
]WER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		1.06

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES

SINGLE PHASE, DEADEND

A5

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	1		DEADEND ASSEMBLY, PRIMARY	
	1		CLEVIS, SECONDARY	
	3		WASHER, SQUARE 2 1/2" X 2 1/2"	
	2		INSULATOR, SUSPENSION	
	1		BOLT, EYE, 5/8" AT REQUIRED LENGTH	
	1		BOLT, MACHINE, 5/8" AT REQUIRED LENGTH	
	1		INSULATOR, SPOOL	
	2		NUT, LOCK 5/8"	



SINGLE PHASE
DOUBLE DEADEND

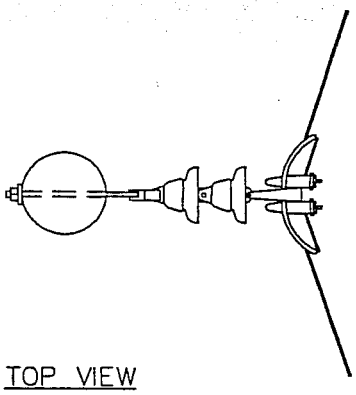
A6

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		1.07

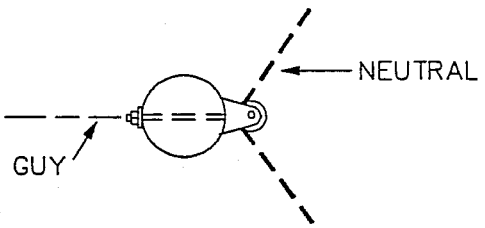
CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
SINGLE PHASE
DOUBLE DEADEND
A6

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	1		NUT, OVAL EYE 5/8"	
	2		CLEVIS, SECONDARY	
	1		PIN, POLE TOP	
	2		DEADEND ASSEMBLY, PRIMARY	
	2		INSULATOR, SPOOL	
	4		WASHER, SQUARE 2 1/2" X 2 1/2"	
	3		BOLT, MACHINE 5/8" AT REQUIRED LENGTH	
	1		INSULATOR, PIN	
	4		INSULATOR, SUSPENSION	
	1		BOLT EYE, 5/8" AT REQUIRED LENGTH	
	4		NUT, LOCK 5/8"	

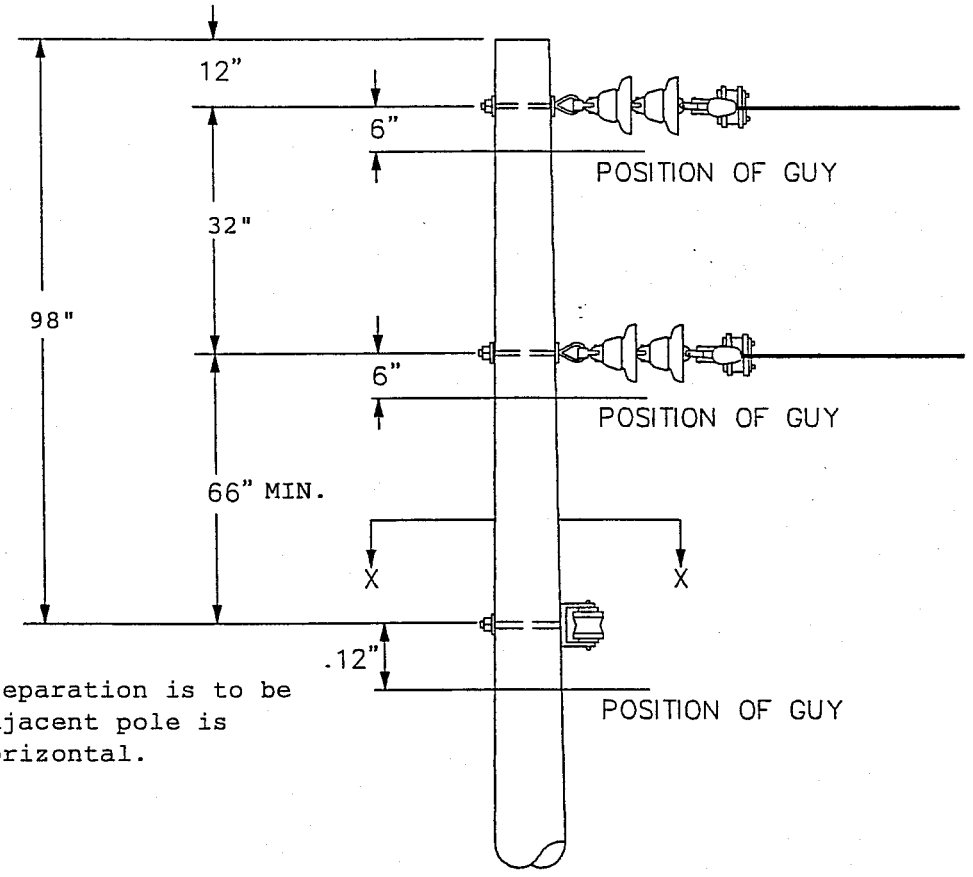
TWO PHASE ASSEMBLIES



TOP VIEW



SECTION X – X



Primary separation is to be 36" if adjacent pole is framed horizontal.

24°–60°

TWO PHASE VERTICAL CONSTRUCTION

B3

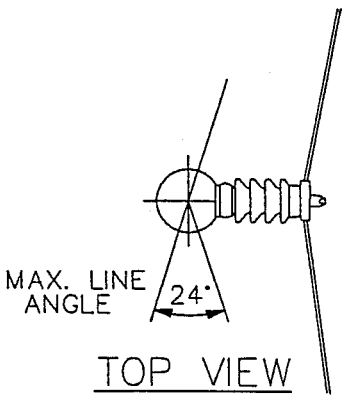
WER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS _____	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		2.04

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES

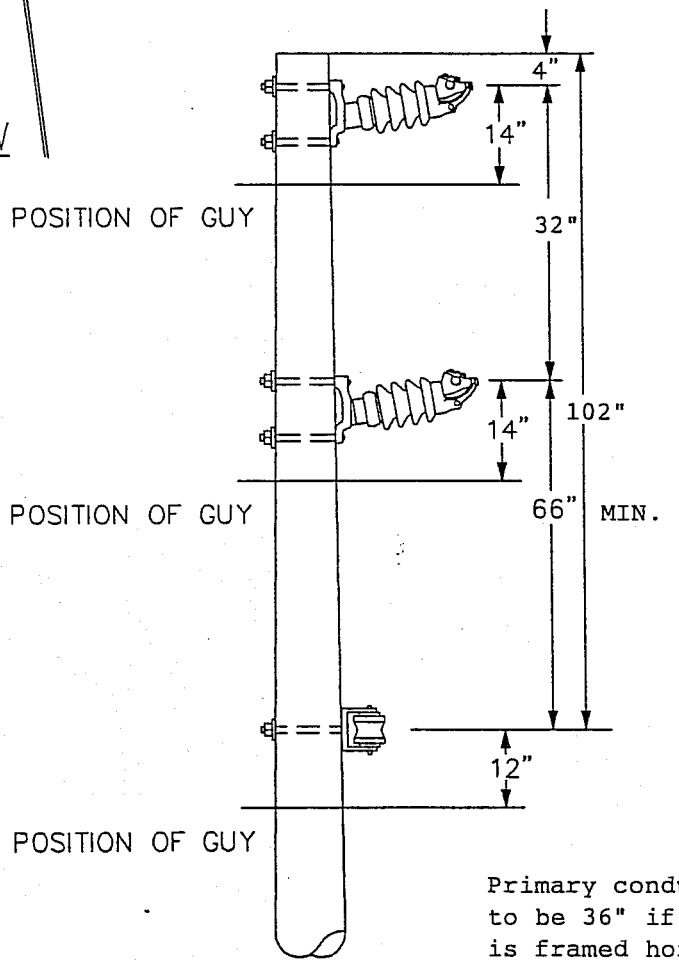
TWO PHASE VERTICAL CONSTRUCTION

B3

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	2		ANGLE ASSEMBLY, PRIMARY	
	1		CLEVIS, SECONDARY	
	3		NUT, LOCK 5/8"	
	5		WASHER, SQUARE 2 1/2" X 2 1/2"	
	2		BOLT, EYE, 5/8" AT REQUIRED LENGTH	
	4		INSULATOR, SUSPENSION	
	1		INSULATOR, SPOOL	
	1		BOLT, MACHINE AT REQUIRED LENGTH	
	2		SHACKLE, 90° TWIST	



TOP VIEW



Primary conductor separation is to be 36" if an adjacent pole is framed horizontal.

6° – 24°

STANDARD CONFIGURATION
MEDIUM LINE ANGLE CONSTRUCTION

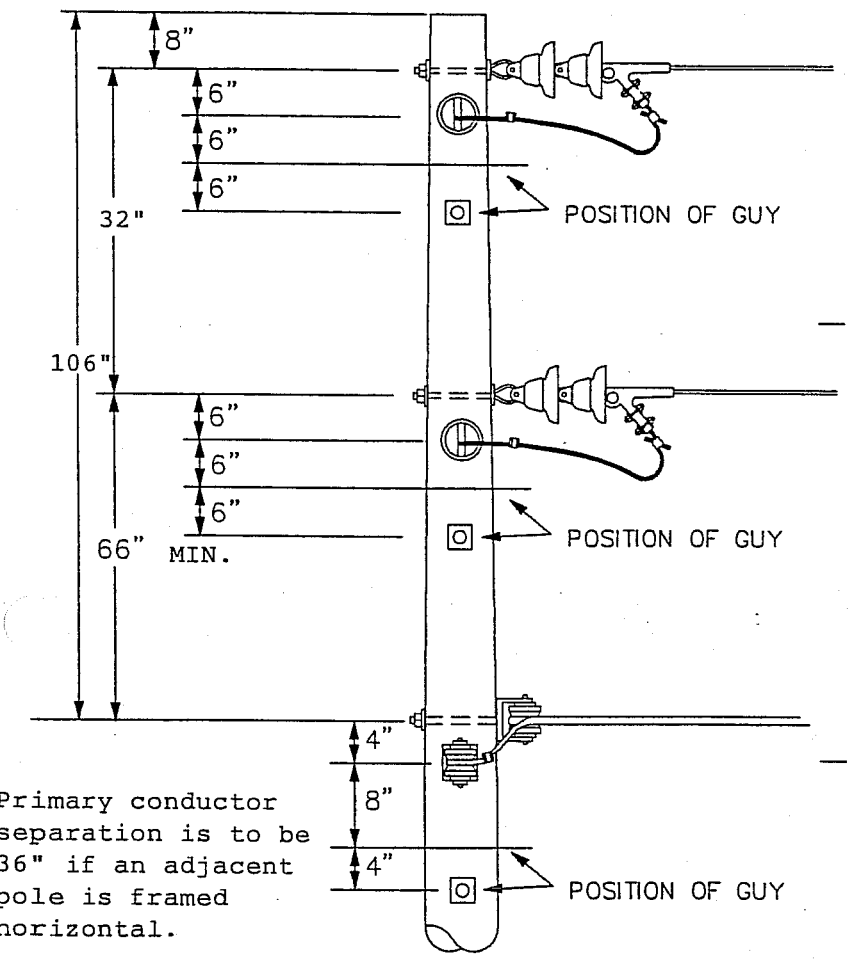
B3PA

OWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		2.05

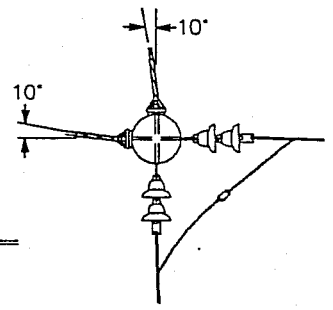
CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
STANDARD CONFIGURATION
MEDIUM LINE ANGLE CONSTRUCTION

B3PA

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	2		INSULATOR, POST TYPE HORIZONTAL	
	2		BRACKET, POST INSULATOR	
	5		WASHERS, SQUARE, 2 1/2" X 2 1/2"	
	1		INSULATOR, SPOOL	
	5		BOLT, MACHINE, 5/8" AT REQUIRED LENGTH	
	1		CLEVIS, SECONDARY	
	2		CLAMP, BUTTERFLY, SIZE AS REQUIRED	
	2		STUD, MOUNTING F/POST INSULATOR	
	6		NUT, LOCK 5/8"	

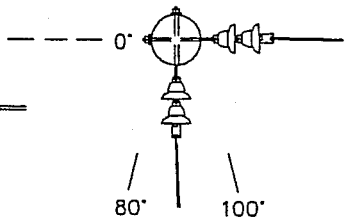


Primary conductor separation is to be 36" if an adjacent pole is framed horizontal.



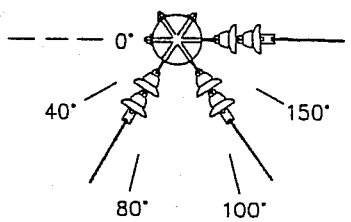
TOP VIEW

NOTE:
LOCATE ANCHOR 10° OUTSIDE OF LINE ANGLE.



80° TO 100°
LINE ANGLE

NOTE:
USE PREDRILLED HOLE AS SHOWN.



40° TO 80° & 100° TO 150°
LINE ANGLE

NOTE:

1. MAXIMUM SAG AT 60° F. IS 48 INCHES.

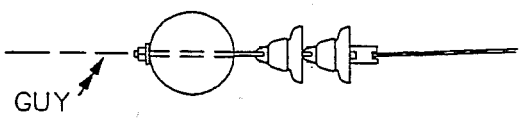
STANDARD CONFIGURATION
VERTICAL CONSTRUCTION – DOUBLE DEADEND ANGLE

B4

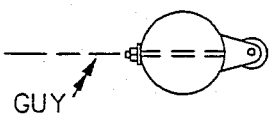
'ER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		2.06

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
STANDARD CONFIGURATION
VERTICAL CONSTRUCTION – DOUBLE DEADEND ANGLE
B4

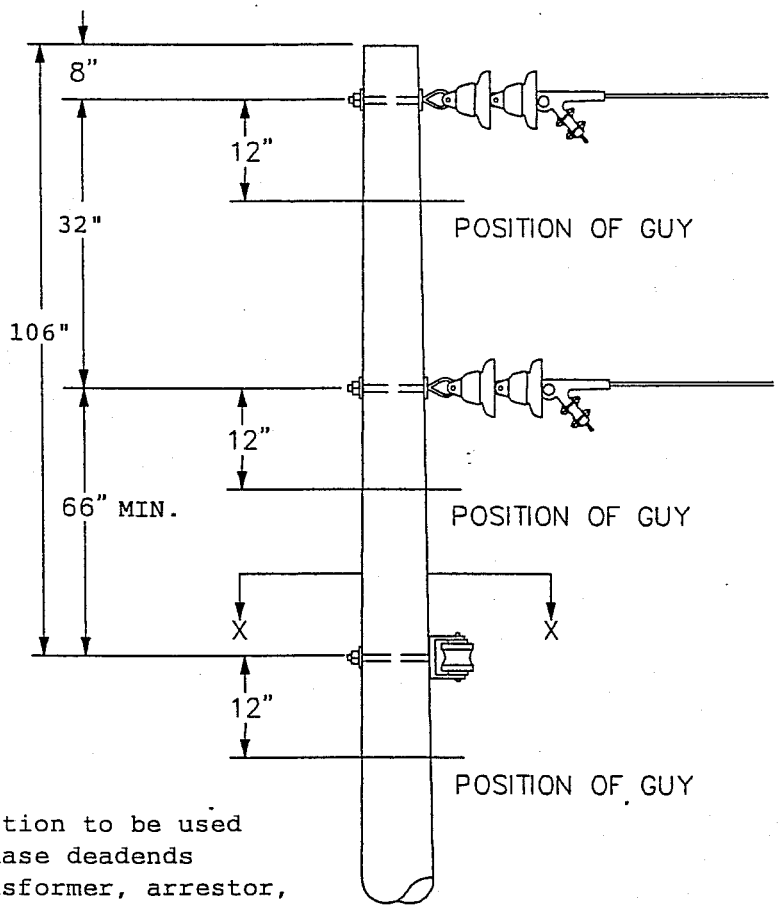
ITEM	QUANTITY	STOCK NO.	MATERIAL	
	8		INSULATOR, SUSPENSION	
	10		WASHERS, SQUARE, 2 1/2" X 2 1/2"	
	2		INSULATOR, SPOOL	
	2		CLEVIS, SECONDARY	
	2		BOLT, MACHINE, 5/8" AT REQUIRED LENGTH	
	4		EYE BOLT 5/8" AT REQUIRED LENGTH	
	6		NUT, LOCK 5/8"	
	4		DEADEND ASSEMBLIES, PRIMARY, SIZE AS	
			REQUIRED	



TOP VIEW



SECTION X – X



This configuration to be used for all two phase deadends including transformer, arrestor, and cable riser poles.

Primary conductor separation is to be 36" if adjacent pole is framed horizontal.

TWO PHASE, VERTICAL CONSTRUCTION, DEADEND

B5

OWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		2.07

CONSTRUCTION ASSEMBLY SPECIFICATIONS

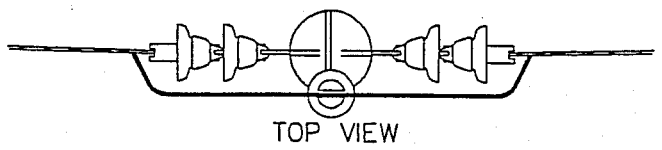
FOR

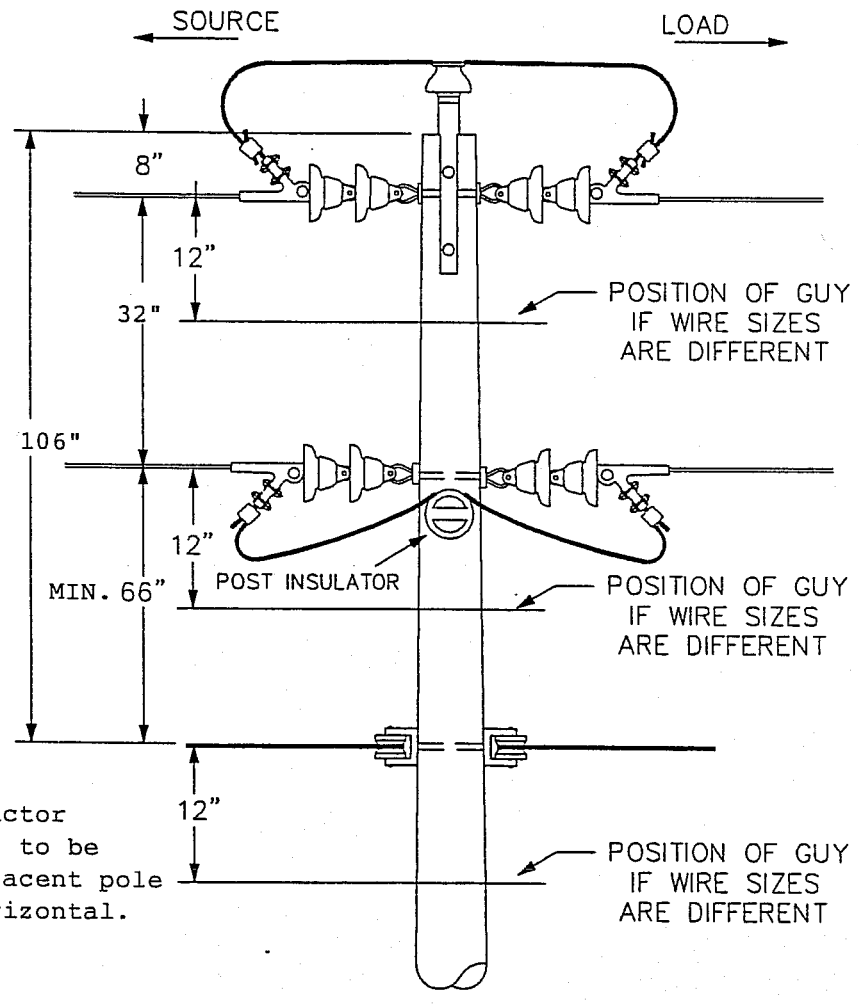
ELECTRIC CITIES

TWO PHASE, VERTICAL CONSTRUCTION, DEADEND

B5

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	2		DEADEND ASSEMBLY, PRIMARY	
	1		CLEVIS, SECONDARY	
	5		WASHER, SQUARE 2 1/2" X 2 1/2"	
	4		INSULATORS, SUSPENSION	
	1		INSULATOR, SPOOL	
	2		BOLT, EYE 5/8" AT REQUIRED LENGTH	
	1		BOLT, MACHINE AT REQUIRED LENGTH	
	3		NUT, LOCK 5/8"	





Primary conductor separation is to be 36" if an adjacent pole is framed horizontal.

TWO PHASE, VERTICAL CONSTRUCTION, DEADEND

B6

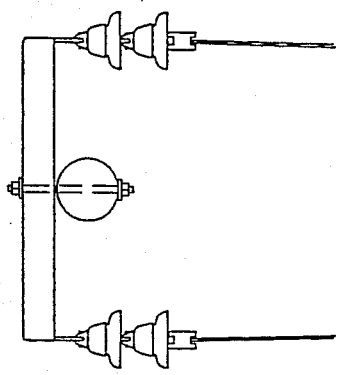
OWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		2.08

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES

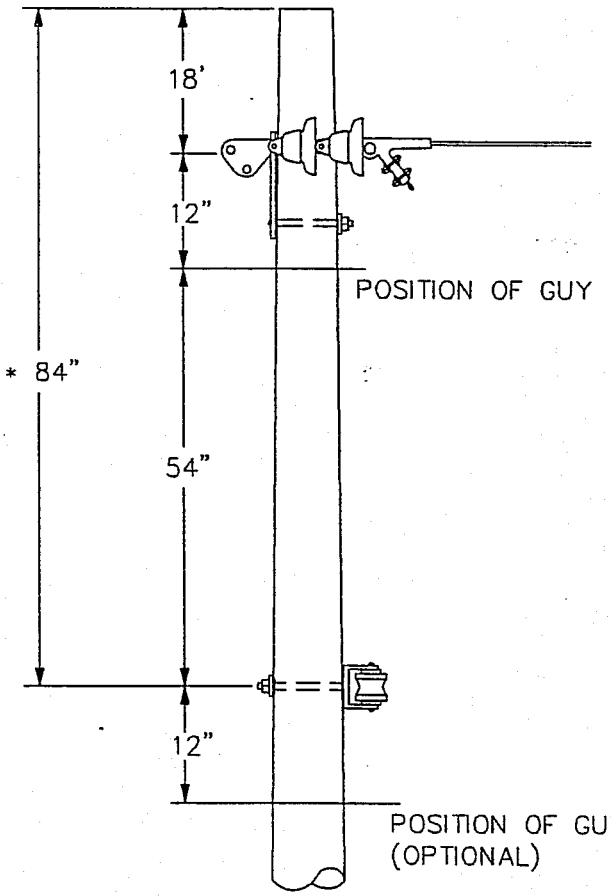
TWO PHASE, VERTICAL CONSTRUCTION, DEADEND

B6

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	4		DEADEND ASSEMBLY, PRIMARY	
	2		CLEVIS, SECONDARY	
	6		WASHER, SQUARE 2 1/2" x 2 1/2"	
	5		NUT, LOCK 5/8"	
	8		INSULATOR, SUSPENSION	
	2		BOLT, EYE, 5/8" AT REQUIRED LENGTH	
	3		BOLT, MACHINE 5/8" AT REQUIRED LENGTH	
	2		INSULATOR, SPOOL	
	2		EYE, NUTS	
	1		3/4" D.A. BOLT SIZE AS REQUIRED	
	1		POST INSULATOR	
	1		PIN, POLE TOP	
	1		INSULATOR, PIN	
	1		NUT, LOCK 3/4"	



TOP VIEW



STANDARD CONFIGURATION
PRIMARY LINE DEADEND

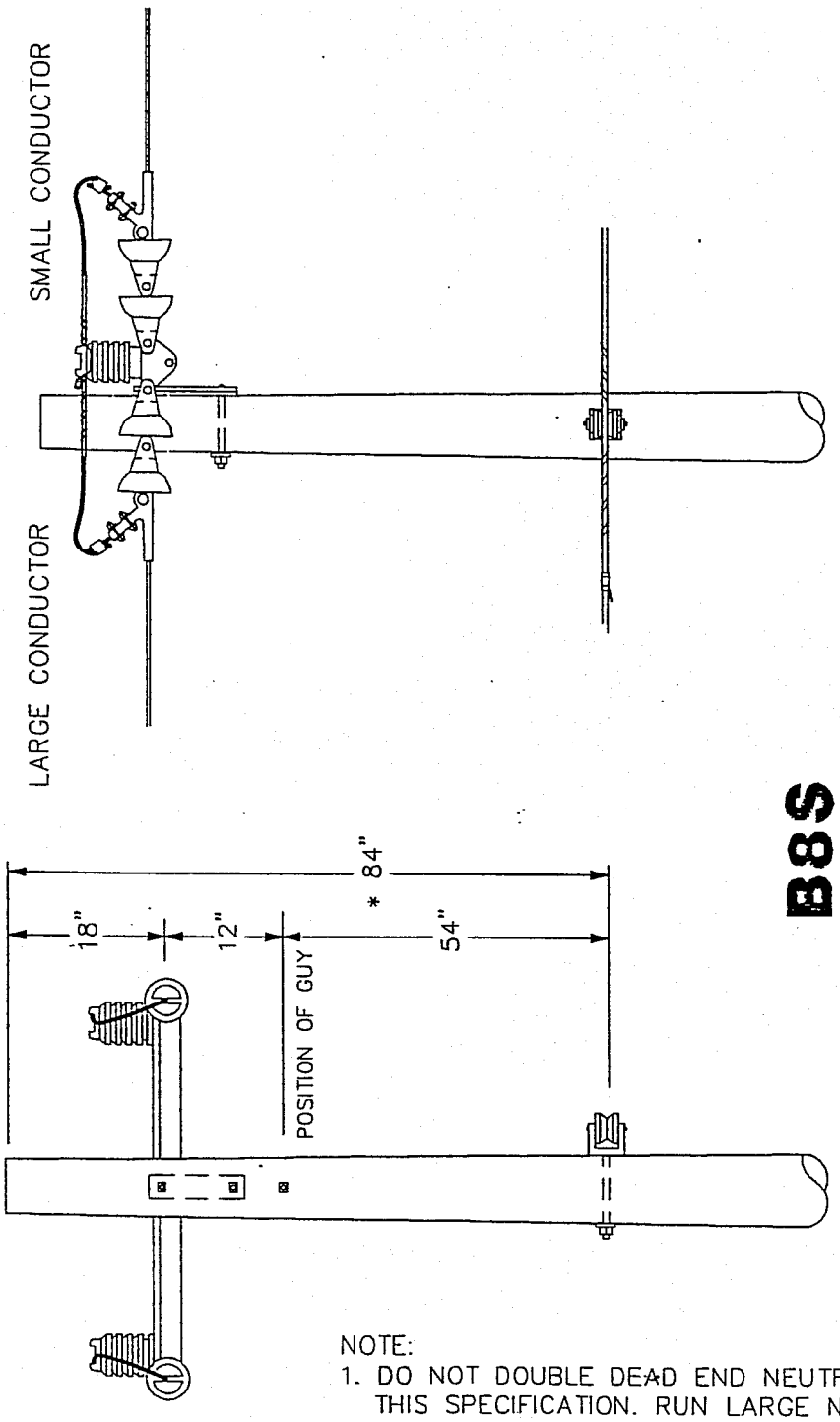
B7S

NOTE:
* MINIMUM OF 72"

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: OCTOBER, 1992		2.10

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
STANDARD CONFIGURATION
PRIMARY LINE DEADEND
B7S

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	4		INSULATOR, SUSPENSION	
	3		WASHERS, SQUARE, 2 1/2" X 2 1/2"	
	1		INSULATOR, SPOOL	
	1		CLEVIS, SECONDARY	
	3		BOLT, MACHINE, 5/8" AT REQUIRED LENGTH	
	1		ARM, 5 FEET STEEL	
	3		NUT, LOCK 5/8"	
	2		DEADEND ASSEMBLY, PRIMARY, SIZE AS REQUIRED	



B8S

STANDARD CONFIGURATION
DOUBLE DEADEND
WIRE SIZE CHANGE

NOTE:
1. DO NOT DOUBLE DEAD END NEUTRAL ON THIS SPECIFICATION. RUN LARGE NEUTRAL TO NEXT POLE FOR DOUBLE DEAD END.
2. LEAVE DOWN GUYS OFF IF WIRE SIZE REMAINS THE SAME

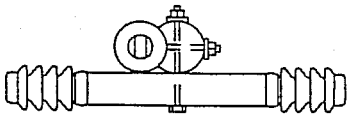
NOTE:
* MINIMUM OF 72"

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: OCTOBER, 1992		2.12

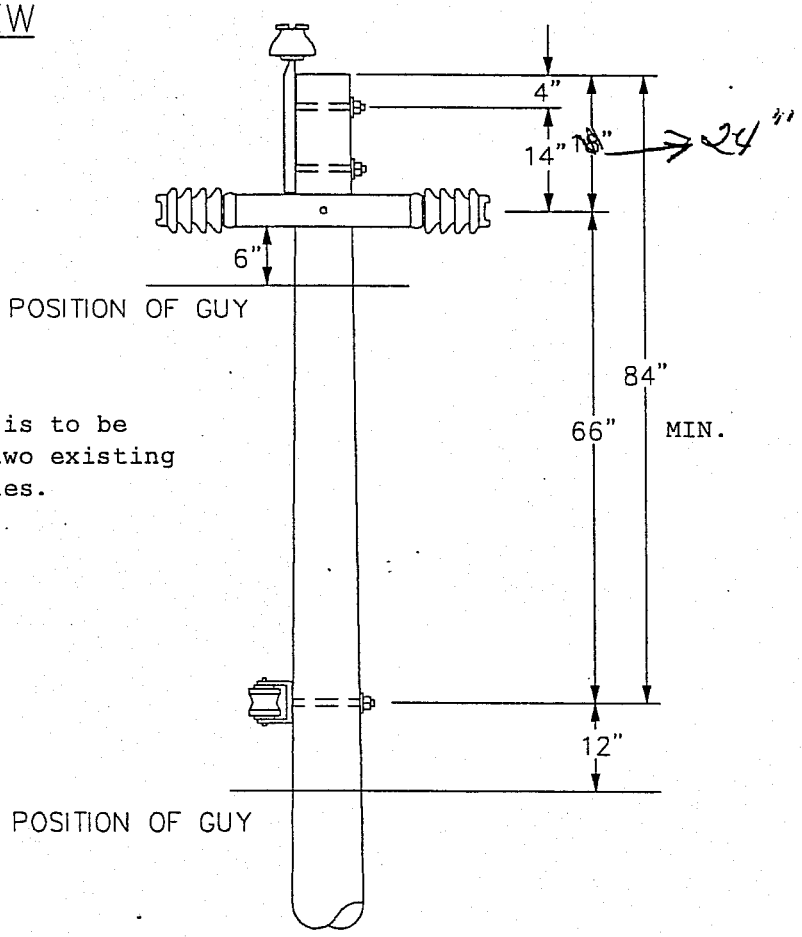
CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
STANDARD CONFIGURATION
DOUBLE DEADEND
B8S

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	8		INSULATOR, SUSPENSION	
	3		WASHER, SQUARE 2 1/2" X 2 1/2"	
	1		INSULATOR, SPOOL	
	1		CLEVIS, SECONDARY	
	3		NUT, LOCK 5/8"	
	1		ARM, 5 FEET STEEL	
	2		STUDS, MOUNTING F/POST INSULATOR	
	2		INSULATOR, POST	
	4		DEADEND SHOES, SIZE AS REQUIRED	
	3		BOLT, MACHINE, 5/8" AT REQUIRED LENGTH	

THREE PHASE ASSEMBLIES



TOP VIEW



This configuration is to be used only between two existing horizontal assemblies.

MAX. SPAN – 500'
0° – 6°

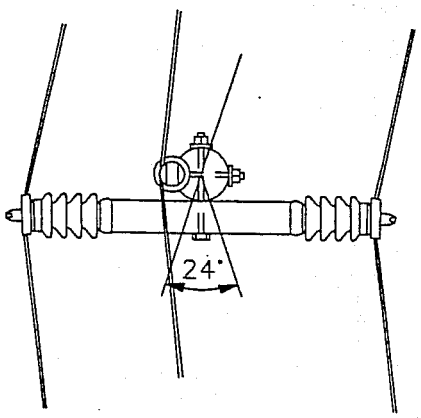
STANDARD CONFIGURATION
STRAIGHT LINE CONSTRUCTION

C1S

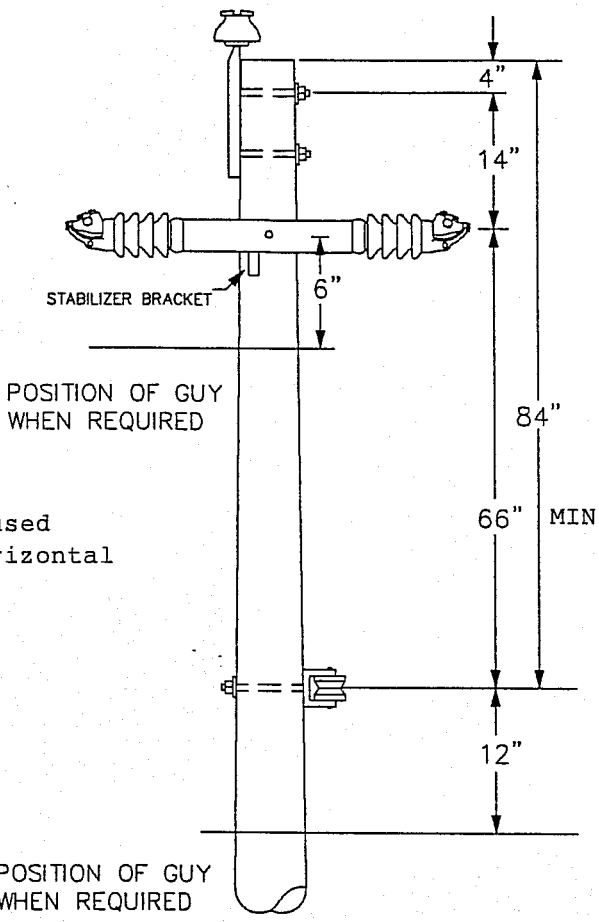
POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		3.03

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
STANDARD CONFIGURATION
STRAIGHT LINE CONSTRUCTION
C1S

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	1		INSULATOR, PIN	
	2		INSULATOR, POST, TIE TOP	
	1		PIN, POLE TOP	
	1		ARM, 2 POST INSULATOR, 36"	
	4		WASHER, SQUARE, 2 1/2" X 2 1/2"	
	1		INSULATORS, SPOOL	
	1		CLEVIS, SECONDARY	
	4		BOLT, MACHINE 5/8" AT REQUIRED LENGTH	
	2		STUDS, MOUNTING F/POST INSULATOR	
	4		NUT, LOCK 5/8"	



TOP VIEW



This configuration is to be used only between two existing horizontal assemblies.

MAX. SPAN – 500'
6° – 24°
STEEL

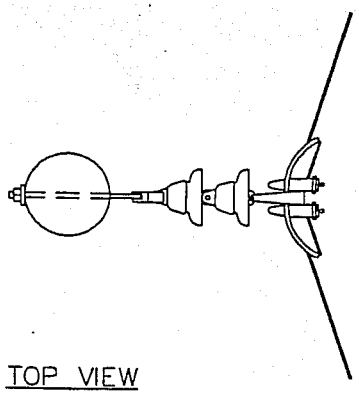
STANDARD CONFIGURATION
SMALL LINE ANGLE CONSTRUCTION

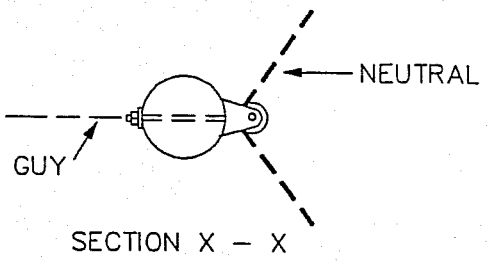
C1PS

OWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		3.02

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
STANDARD CONFIGURATION
SMALL LINE ANGLE CONSTRUCTION
C1PS

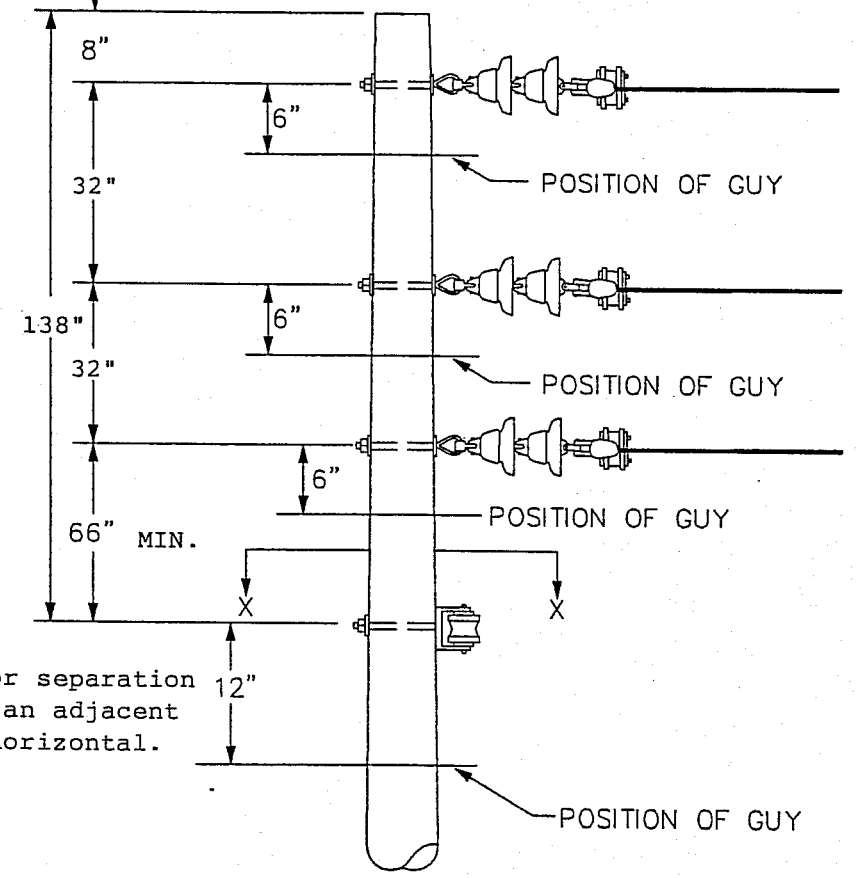
ITEM	QUANTITY	STOCK NO.	MATERIAL	
	1		INSULATOR, PIN	
	2		INSULATOR, POST, TYPE HORIZONTAL	
	1		PIN, POLE TOP	
	1		ARM, 2 POST INSULATOR 36"	
	1		BRACKET, STABILIZER	
	4		WASHER, SQUARE 2 1/2" X 2 1/2"	
	1		SCREW, LAG 1/2" X 6"	
	1		INSULATOR, SPOOL	
	4		BOLT, MACHINE, 5/8" AT REQUIRED LENGTH	
	1		CLEVIS, SECONDARY	
	2		CLAMP, BUTTERFLY, SIZE AS REQUIRED	
	2		STUDS, MOUNTING F/POST INSULATOR	
	1		BRACKET, STABILIZER	
	1		SCREW, LAG 6"	
	4		NUT, LOCK 5/8"	





SECTION X – X

TOP VIEW



Primary conductor separation is to be 36" if an adjacent pole is framed horizontal.

THREE PHASE, VERTICAL CONSTRUCTION, SUSPENSION INSULATORS

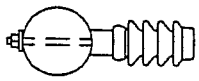
C3

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		3.06

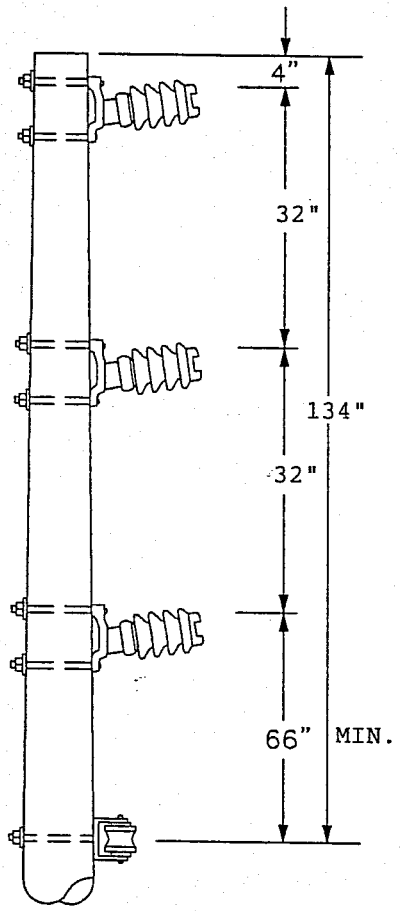
CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
THREE PHASE, VERTICAL CONSTRUCTION,
SUSPENSION INSULATORS
C3

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	1		BOLT, MACHINE, 5/8" AT REQUIRED LENGTH	
	3		ANGLE ASSEMBLY, PRIMARY	
	1		CLEVIS, SECONDARY	
	7		WASHER, SQUARE 2 1/2" X 2 1/2"	
	4		NUT, LOCK 5/8"	
	6		INSULATOR, SUSPENSION	
	3		BOLT, EYE, 5/8" AT REQUIRED LENGTH	
	1		INSULATOR, SPOOL	
	3		CLEVIS, 90° TWIST	

28' 4"



TOP VIEW



Primary conductor separation is to be 36" is an adjacent pole is framed horizontal.

MAX. SPAN – 500'
0° – 6°

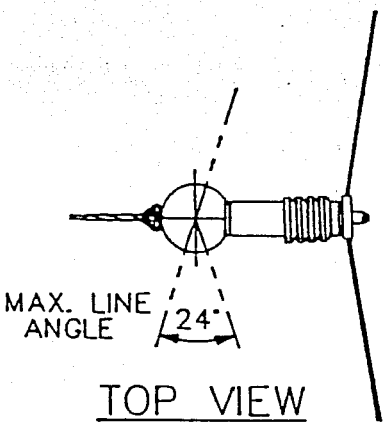
ALTERNATE CONFIGURATION
VERTICAL STRAIGHT LINE CONSTRUCTION

C3PA

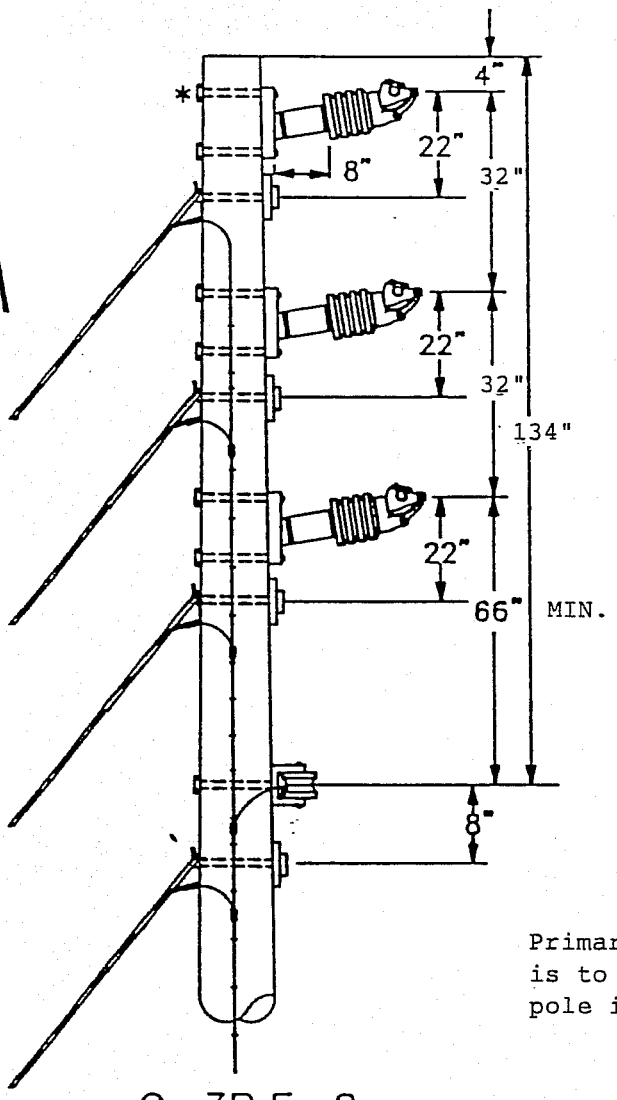
OWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		3.07

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
ALTERNATE CONFIGURATION
VERTICAL STRAIGHT LINE CONSTRUCTION
C3PA

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	3		INSULATORS, POST, TIE TOP	
	3		BRACKET, POST INSULATOR	
	7		WASHERS, SQUARE, 2 1/2" X 2 1/2"	
	1		INSULATOR, SPOOL	
	1		CLEVIS, SECONDARY	
	7		BOLT, MACHINE, 5/8" AT REQUIRED LENGTH	
	3		STUD, MOUNTING F/POST INSULATOR	
	7		NUT, LOCK 5/8"	



TOP VIEW



Primary conductor separation is to be 36" if an adjacent pole is framed horizontal.

C–3P,E–8

6° – 24°

* STANDARD CONFIGURATION

MEDIUM LINE ANGLE CONSTRUCTION

16" BRACKET

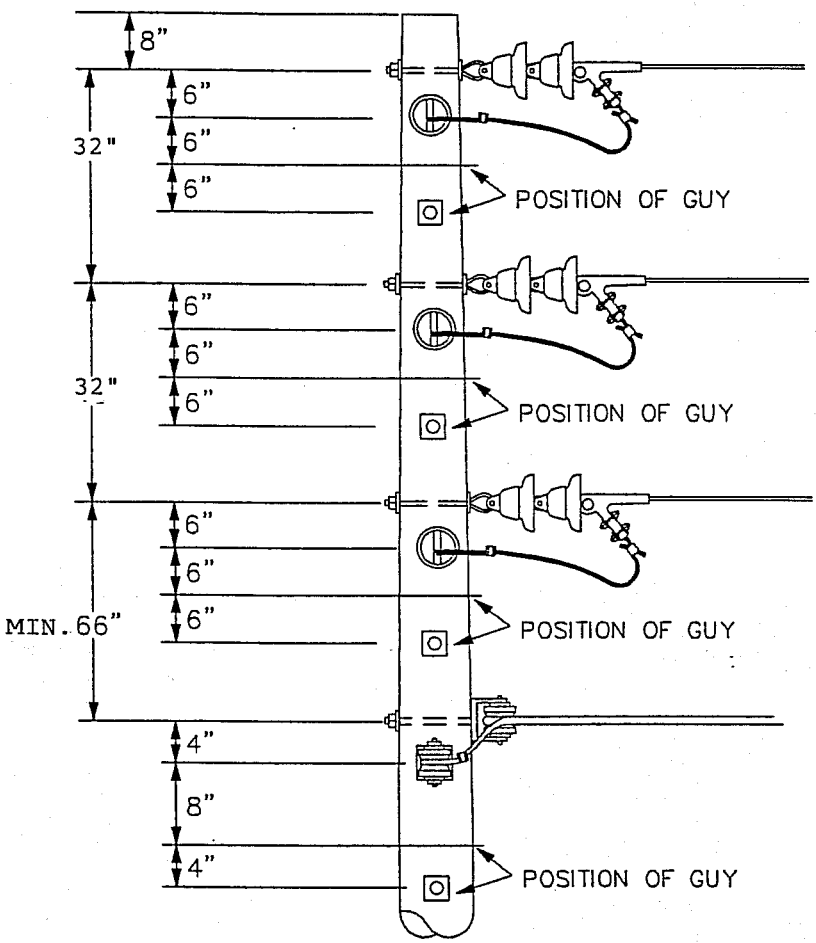
*–DENOTES THE USE OF A PRE–DRILLED HOLE

DRAWN BY: H. BREHEN	REVISIONS	MARIETTA–BLW
SCALE: NOT TO SCALE		C–3P,E–8
DATE: 11–12–87	APPROVED BY: V. BLACKWOOD	

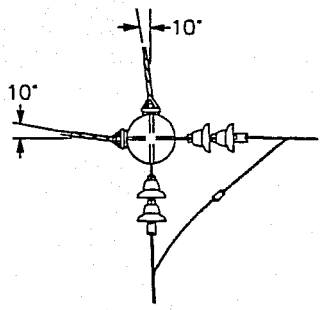
BILL OF MATERIAL
C-3P,E-8

14.4/24.9 KV, 3-PHASE
MEDIUM LINE ANGLE CONSTRUCTION

QT. #	KEY #	MATERIAL	COST
3	96940	INSULATOR, POST TYPE HORIZONTAL	
3	58200	BRACKET, POST INSULATOR 8"	
7	146080	WASHERS, SQUARE, 2 1/2"	
1	97430	INSULATOR, SPOOL	
1	65650	CLEVIS, SECONDARY I-20	
4	57291	BRACKET, GUY, HOG EAR	
4	146100	4" X 4" SQUARE CURVED WASHERS	
3	97650	INSULATOR, LINK STICK, 54"	
1	122588	ROD, GROUND	
4	124730	SCREW, LAG	
3		CLAMP, BUTTERFLY, SIZE AS REQUIRED	
11		BOLT, MACHINE, 5/8" AT REQUIRED LENGTH	
14		DEADEND, GUY, PERFORMED, 4 @ GROUND	
2		ANCHORS, SIZE & TYPE REQ. BY CONDITIONS	
2		RODS, ANCHOR, (SIZE AS REQ.)	
1		TIE, SPOOL I-20(SIZE AS REQ.)	
		POLE, (SIZE AS REQ.)	

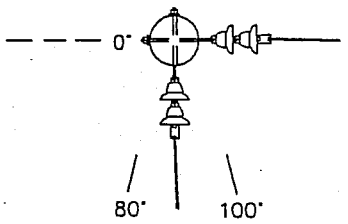


Primary conductor separation is to be 36" if an adjacent pole is framed horizontal.



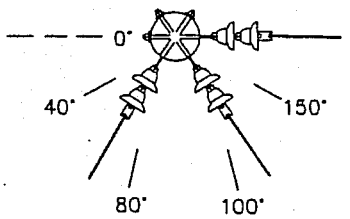
TOP VIEW

NOTE:
LOCATE ANCHOR 10° OUTSIDE OF LINE ANGLE.



80° TO 100°
LINE ANGLE

NOTE:
USE PREDRILLED HOLE AS SHOWN.



40° TO 80° & 100° TO 150°
LINE ANGLE

NOTE:
1. MAXIMUM SAG AT 60° F. IS 48 INCHES.

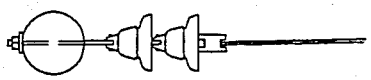
STANDARD CONFIGURATION
VERTICAL CONSTRUCTION – DOUBLE DEADEND ANGLE

C4

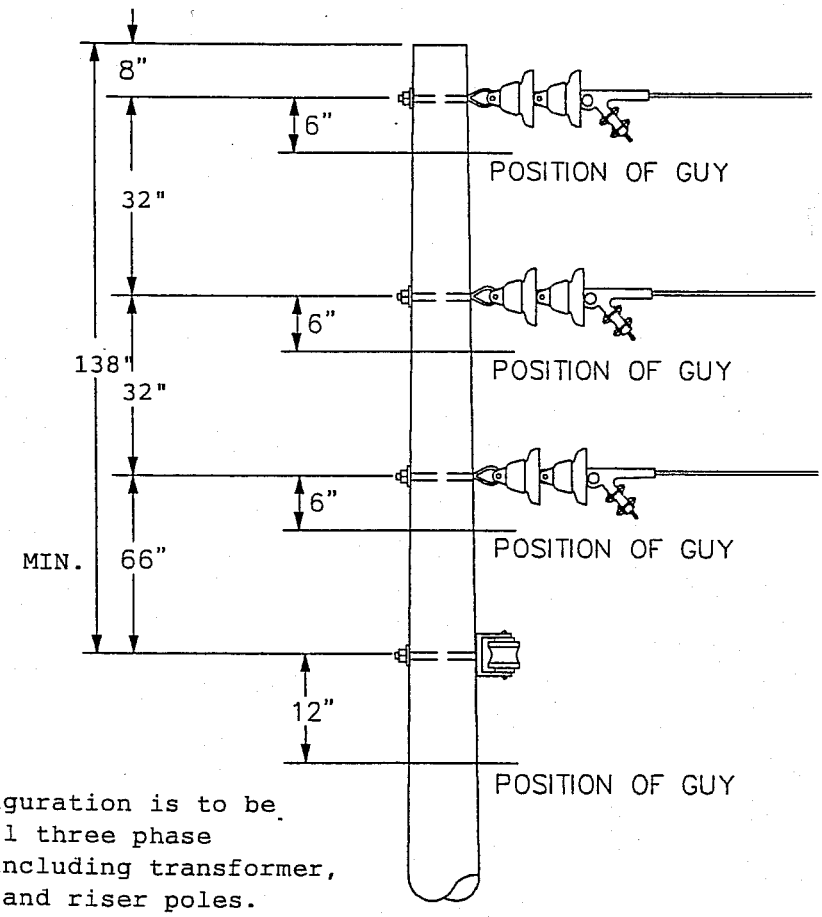
POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		3.08

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
STANDARD CONFIGURATION
VERTICAL CONSTRUCTION – DOUBLE DEADEND ANGLE
C4

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	12		INSULATOR, SUSPENSION	
	14		WASHERS, SQUARE, 2 1/2" x 2 1/2"	
	2		INSULATOR, SPOOL	
	2		CLEVIS, SECONDARY	
	6		EYE BOLT 5/8" AT REQUIRED LENGTH	
	6		DEADEND ASSEMBLIES, PRIMARY, SIZE AS	
			REQUIRED	
	2		BOLT, MACHINE, 5/8" AT REQUIRED LENGTH	
	8		NUT, LOCK 5/8"	



TOP VIEW



This configuration is to be used on all three phase deadends including transformer, arrestor, and riser poles.

The primary conductor separation is to be 36" if adjacent pole is framed horizontal.

THREE PHASE, VERTICAL CONSTRUCTION, DEADEND

C5

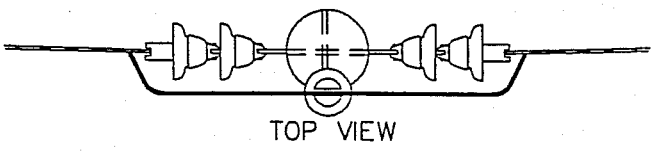
POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		3.09

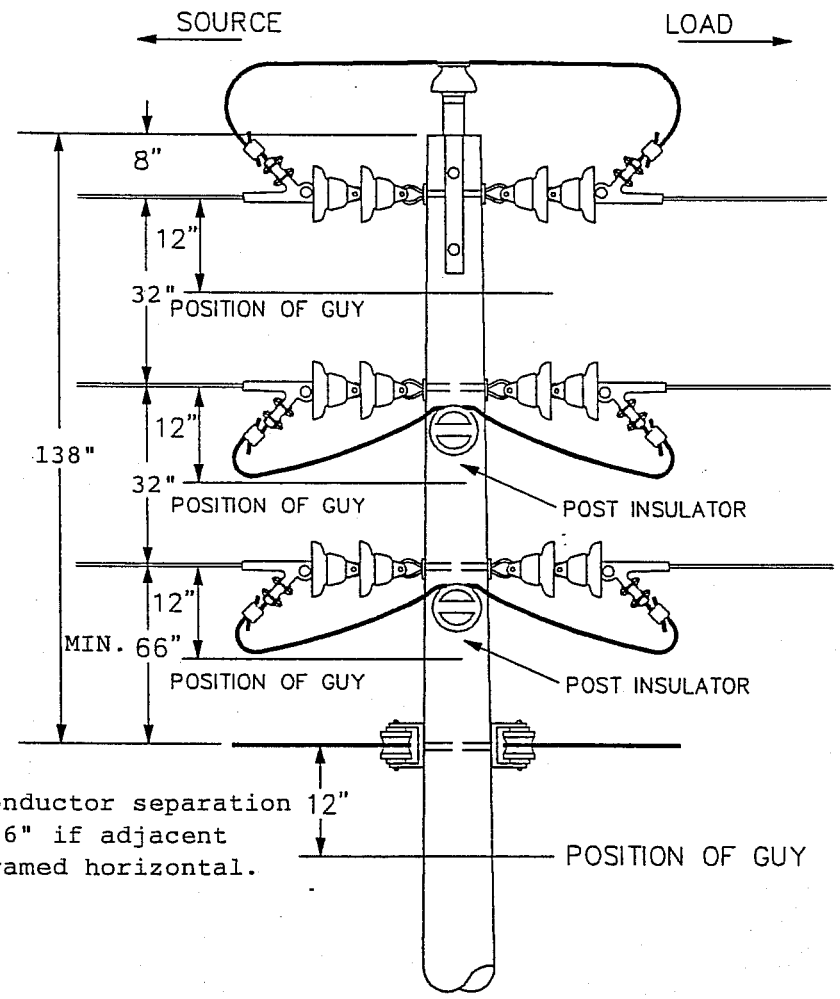
CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES

THREE PHASE, VERTICAL CONSTRUCTION, DEADEND

C5

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	3		DEADEND ASSEMBLY, PRIMARY	
	1		INSULATOR, SPOOL	
	7		WASHER, SQUARE 2 1/2" X 2 1/2"	
	4		NUT, LOCK 5/8"	
	6		INSULATOR, SUSPENSION	
	3		BOLT, EYE, 5/8" AT REQUIRED LENGTH	
	1		BOLT, MACHINE, 5/8" AT REQUIRED LENGTH	
	1		CLEVIS, SECONDARY	





Primary conductor separation is to be 36" if adjacent pole is framed horizontal.

THREE PHASE, VERTICAL CONSTRUCTION, DEADEND

C6

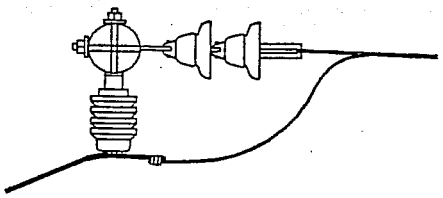
OWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		3.10

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES

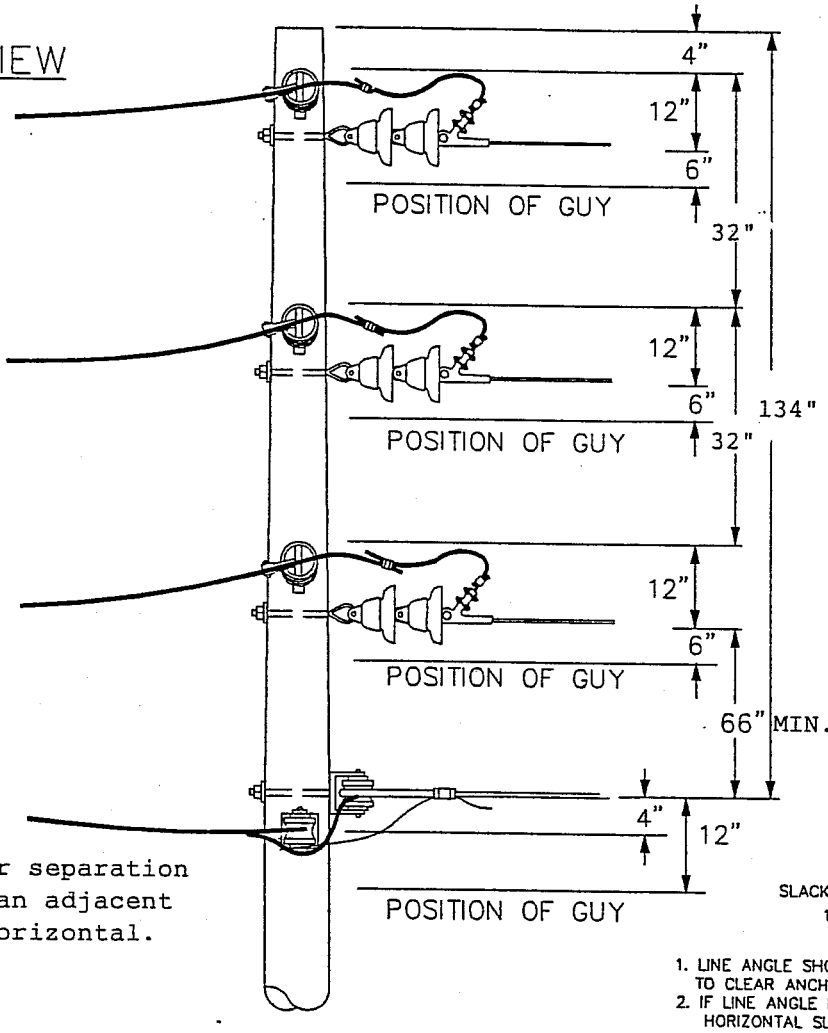
THREE PHASE, VERTICAL CONSTRUCTION, DEADEND

C6

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	6		DEADEND ASSEMBLY, PRIMARY	
	2		INSULATOR, SPOOL	
	10		WASHER, SQUARE 2 1/2" X 2 1/2"	
	8		NUT, LOCK 5/8"	
	12		INSULATOR, SUSPENSION	
	3		BOLT, EYE, 5/8" AT REQUIRED LENGTH	
	3		BOLT, MACHINE, 5/8" AT REQUIRED LENGTH	
	2		CLEVIS, SECONDARY	
	3		NUT, EYE 5/8"	
	2		BOLT, DA 3/4" F/POST INSULATOR	
	2		NUT, LOCK 3/4"	



TOP VIEW



Primary conductor separation is to be 36" if an adjacent pole is framed horizontal.

1. LINE ANGLE SHOULD EQUAL OR EXCEED 15° TO CLEAR ANCHOR GUYS.
2. IF LINE ANGLE IS LESS THAN 15° THEN HORIZONTAL SLACK SPAN SHOULD BE CONSTRUCTION.

NOTES – GENERAL:
1. SLACK SPAN LENGTH SHOULD BE AS SHORT AS POSSIBLE.
2. SLACK SPAN CONDUCTOR SHOULD BE HAND TENSIONED TO AVOID PULLING OVER THE MAIN LINE POLE.
3. DO NOT USE HORIZONTAL CONSTRUCTION ON ONE POLE AND VERTICAL CONSTRUCTION ON THE OTHER.
4. THREE PHASE LINE CUTOUTS SHOULD NOT BE INSTALLED ON THESE POLES.

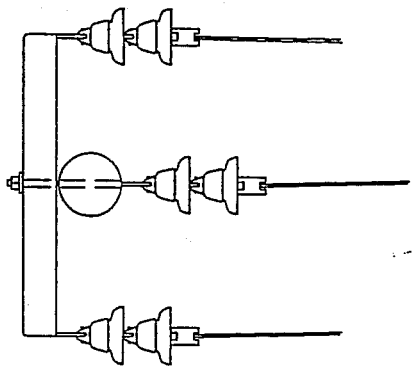
SLACK SPAN VERTICAL CONSTRUCTION

C6A

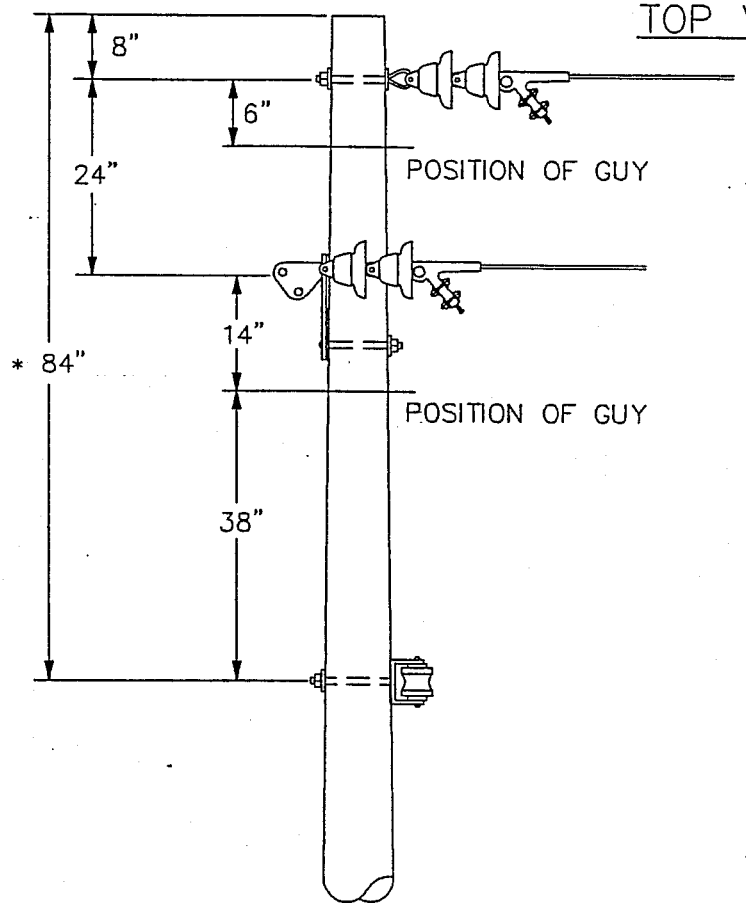
WER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		3.11

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
SLACK SPAN
VERTICAL CONSTRUCTION
C6A

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	6		INSULATORS, SUSPENSION	
	3		INSULATORS, POST TYPE VERTICAL	
	3		DEADEND SHOES, SLACK SPAN	
	11		WASHER, SQUARE 2 1/2" X 2 1/2"	
	2		INSULATOR, SPOOL	
	2		CLEVIS, SECONDARY	
	3		DEADEND, PRIMARY, SIZE AS REQUIRED	
	3		BOLT, 3/4" D.A., SIZE AS REQUIRED	
	2		BOLT, MACHINE 5/8" SIZE AS REQUIRED	
	3		BOLT, EYE, SIZE AS REQUIRED	
	8		NUT, LOCK 5/8"	



TOP VIEW



(RECOMMENDED FOR WIRE LARGER THAN 1/0)

STANDARD CONFIGURATION
PRIMARY LINE DEADEND

C7S

NOTE:
* MINIMUM OF 72"

OWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: OCTOBER, 1992		3.13

CONSTRUCTION ASSEMBLY SPECIFICATIONS

FOR

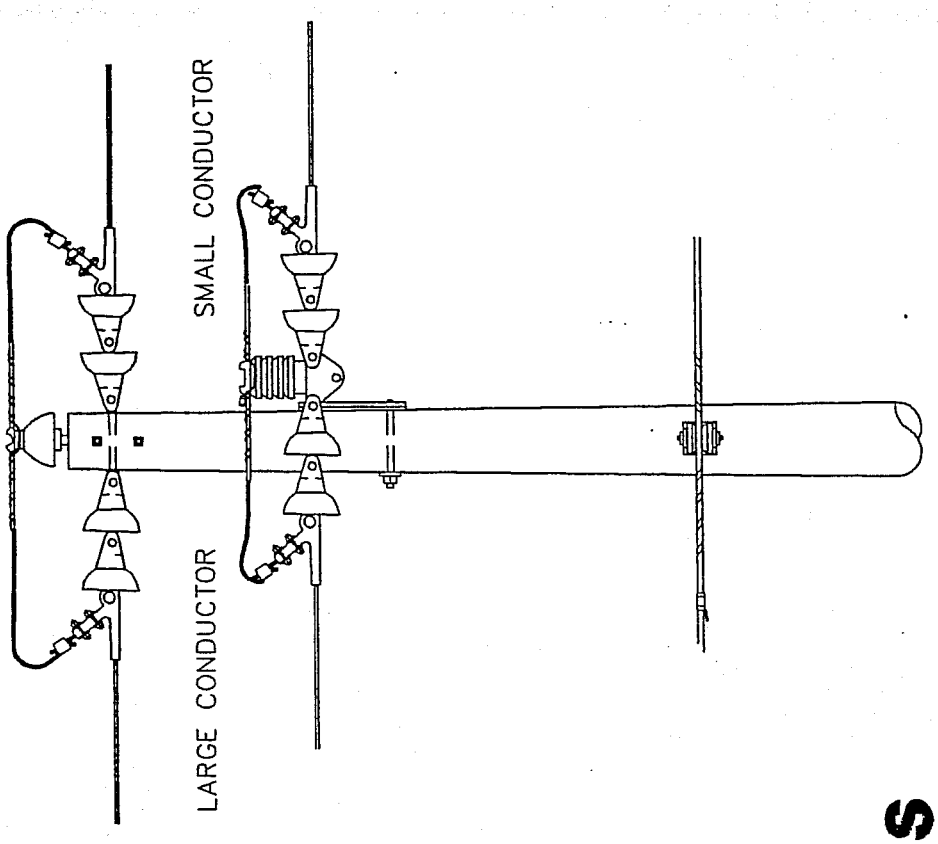
ELECTRIC CITIES

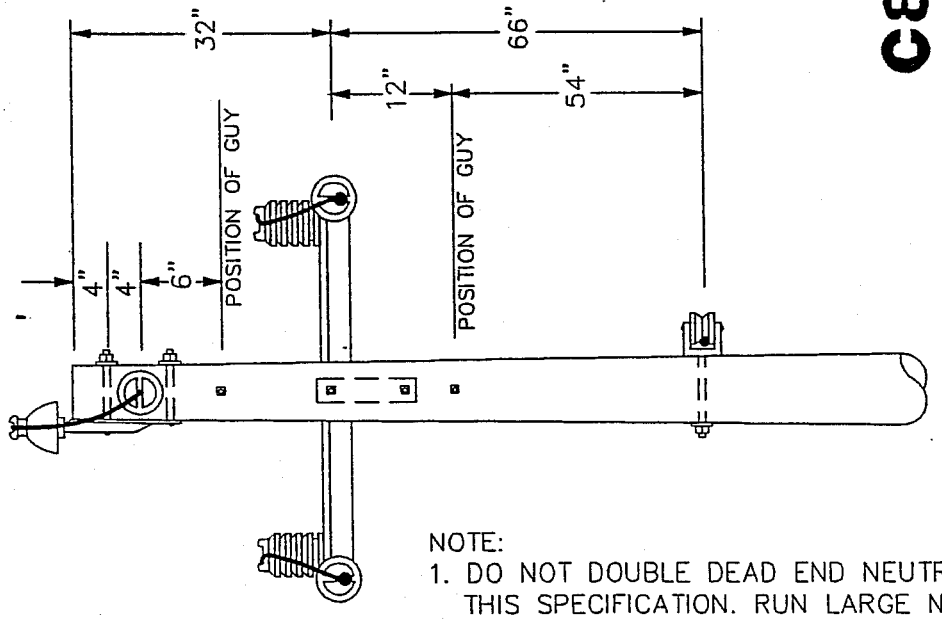
STANDARD CONFIGURATION

PRIMARY LINE DEADEND

C7S

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	6		INSULATOR, SUSPENSION	
	3		WASHERS, SQUARE, 2 1/2" X 2 1/2"	
	1		INSULATOR, SPOOL	
	1		CLEVIS, SECONDARY	
	1		EYE BOLT, 5/8" AT REQUIRED LENGTH	
	4		BOLT, MACHINE, 5/8" AT REQUIRED LENGTH	
	3		DEADEND ASSEMBLY, PRIMARY, SIZE AS REQUIRED	
	1		ARM, 5 FEET STEEL	
	4		NUT, LOCK 5/8"	
	1		WASHER, CURVED, 4" X4 "	





C8S

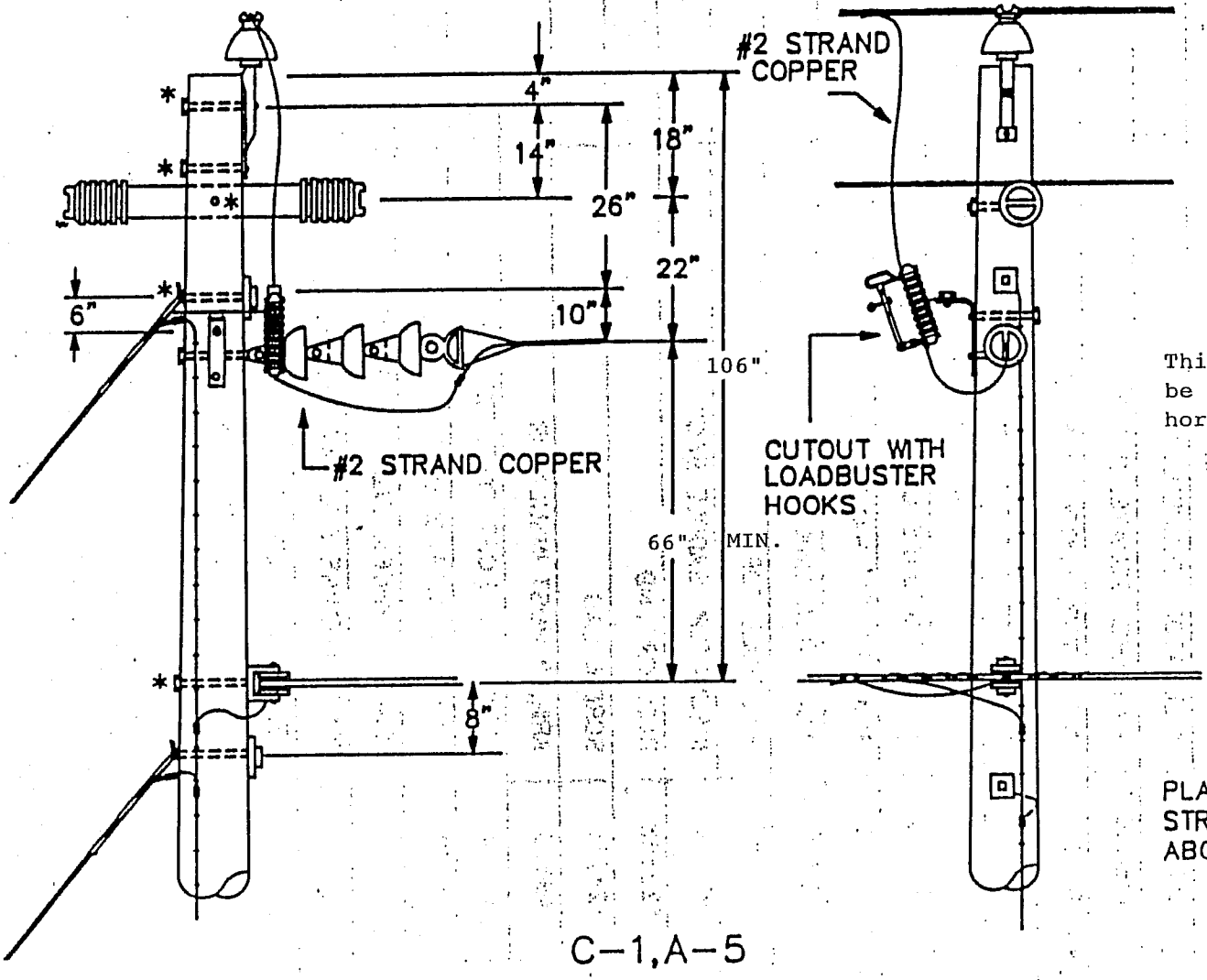
STANDARD CONFIGURATION
DOUBLE DEADEND
WIRE SIZE CHANGE

NOTE:
1. DO NOT DOUBLE DEAD END NEUTRAL ON THIS SPECIFICATION. RUN LARGE NEUTRAL TO NEXT POLE FOR DOUBLE DEAD END.
2. LEAVE DOWN GUYS OFF IF WIRE SIZE REMAINS THE SAME

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: OCTOBER, 1992		3.16

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
STANDARD CONFIGURATION
DOUBLE DEADEND
C8S

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	12		INSULATOR, SUSPENSION	
	7		WASHER, SQUARE 2 1/2" X 2 1/2"	
	1		INSULATOR, SPOOL	
	1		CLEVIS, SECONDARY	
	6		NUT, LOCK 5/8"	
	1		EYE BOLT, 5/8" AT REQUIRED LENGTH	
	1		ARM, 5 FEET STEEL	
	2		STUDS, MOUNTING F/POST INSULATOR	
	1		PIN, POLE TOP	
	1		INSULATOR, SADDLE BACK	
	2		INSULATOR, POST	
	6		DEADEND SHOES, SIZE AS REQUIRED	
	5		BOLT, MACHINE, 5/8" AT REQUIRED LENGTH	



This configuration is to be used only on existing horizontal assemblies.

PLASE FUSE SIZE ON STREET SIDE OF POLE 8' ABOVE GROUND LEVEL.

C-1,A-5

SINGLE PHASE FUSED PRIMARY LINE PULL OFF

NOTE:
1. MAXIMUM PULL OFF CONDUCYOR SIZE – 4/0 ACSR.
2. USE CUTOUTS WITH LOADBUSTER HOOKS ONLY.
3. IF NORMAL OPEN POINT, REMOVE FUSE BARRELS AND STORE IN UP RIGHT POSITIONON POLE.

*—DENOTES THE USE OF A PRE-DRILLED HOLE

DRAWN BY: H. BREHEN
SCALE: NOT TO SCALE
DATE: 11-18-87

REVISIONS

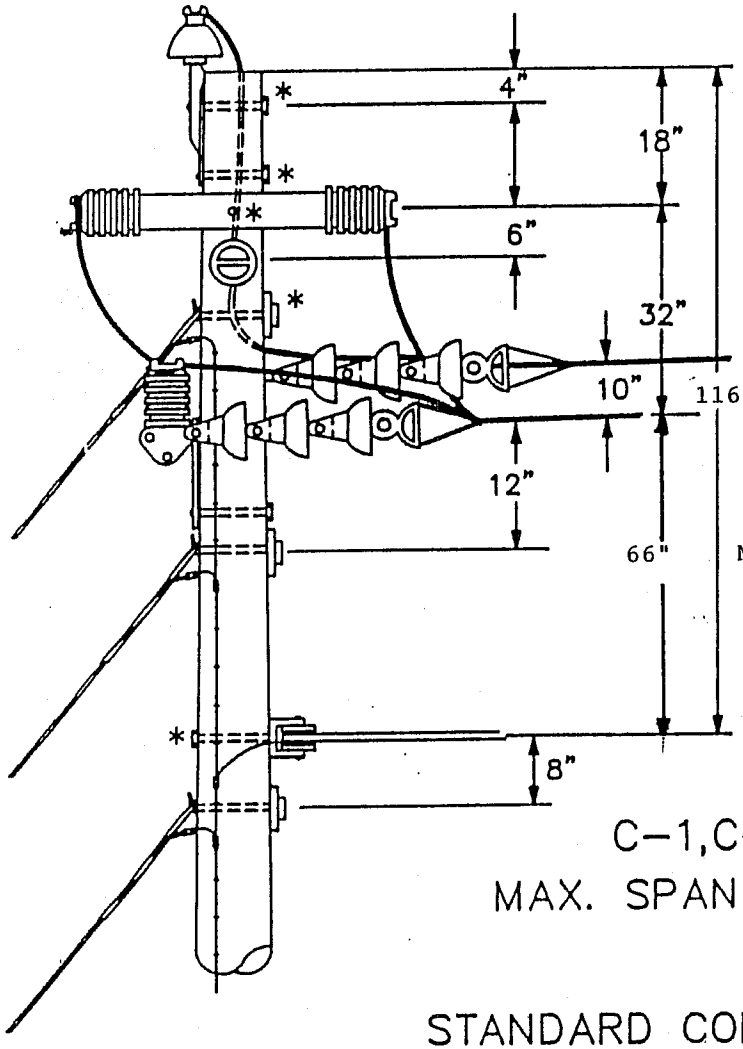
APPROVED BY: V. BLACKWOOD

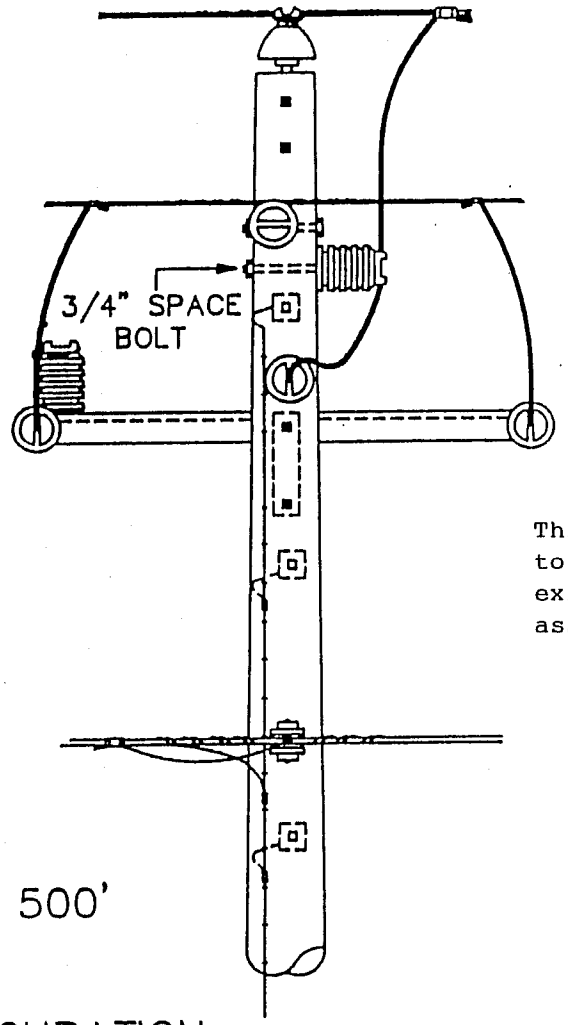
MARIETTA-BLW

C-1,A-5

BILL OF MATERIAL
C-1,A-5
SINGLE PHASE FUSED PRIMARY LINE PULL OFF

QT. #	KEY #	MATERIAL	COST
3	96800	INSULATOR, SUSPENSION	
7	146080	WASHERS, SQUARE, 2 1/2"	
1	97430	INSULATOR, SPOOL	
1	65650	CLEVIS, SECONDARY I-20	
2	57291	BRACKET, GUY GRIP HOG EAR	
2	146100	4" X 4" SQUARE CURVED WASHERS	
1	57250	BRACKET, "T" HANGER	
1	97650	INSULATOR, LINK STICK, 54"	
1	112480	PIN, POLE TOP	
1	97220	INSULATOR, SADDLE BACK	
1	122588	ROD, GROUND	
3	124730	SCREW, LAG	
1	46670	ARM, 2 POST INSULATOR	
2	97710	INSULATOR, POST TYPE, TIE TOP	
1	78880	CUTOUTS, 100A OPEN TYPE	
1		DEADEND SHOES, SIZE AS REQUIRED	
7		BOLT, MACHINE 5/8" AT REQUIRED LENGTH	
1		TIE, SPOOL I-20 (SIZE AS REQ.)	
2		TIE,PRIMARY,SIDE TYPE (SIZE AS REQ.)	
1		TIE, PRIMARY, CEN. POSITION (SIZE AS REQ.)	
1		DEADEND, DIST GRIP SPOOL (SIZE AS REQ.)	
1		ANCHOR, SIZE & TYPE REQ. BY CONDITIONS	
1		ROD, ANCHOR SIZE AS REQUIRED	
6		DEADEND, GUY, PREFORMED, 2Φ GROUND	
1		POLE SIZE AS REQUIRED	
1		BOLT, EYE 5/8" (SIZE AS REQ.)	





This configuration is to be used only on existing horizontal assemblies.

C-1,C-7
MAX. SPAN - 500'

STANDARD CONFIGURATION
PRIMARY LINE PULL-OFF

NOTE:
1. INSTALL DEAD END ARM PERPENDICULAR TO PULL OFF.

*—DENOTES THE USE OF A PRE-DRILLED HOLE

DRAWN BY: H. BREHEN
SCALE: NOT TO SCALE
DATE: 11-25-87

REVISIONS

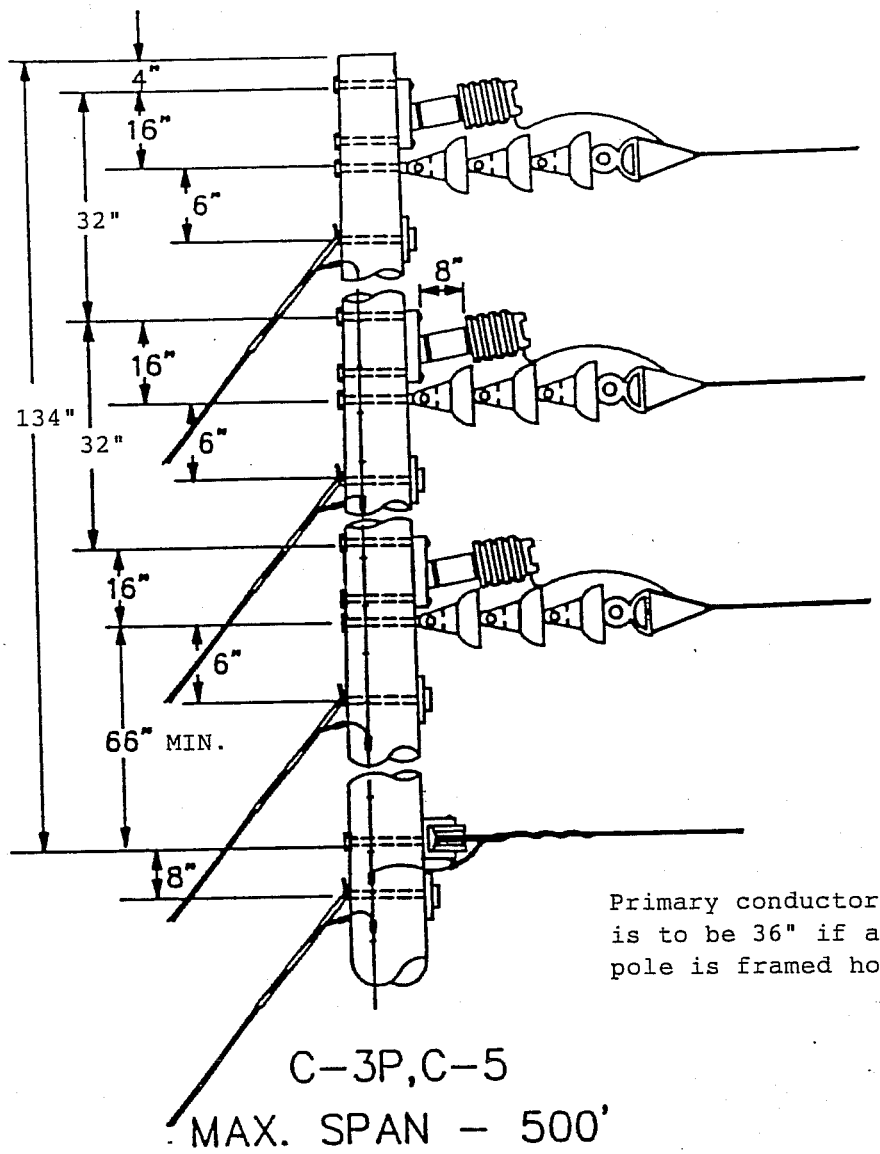
APPROVED BY: V. BLACKWOOD

MARIETTA-BLW

C-1,C-7

BILL OF MATERIAL
C-1, C-7
PRIMARY LINE PULL-OFF

QT. #	KEY #	MATERIAL	COST
9	96800	INSULATOR, SUSPENSION	
1	112480	PIN, POLE TOP	
1	97220	INSULATOR, SADDLEBACK	
9	146080	WASHERS, SQUARE, 2 1/2"	
1	97430	INSULATOR, SPOOL	
1	65650	CLEVIS, SECONDARY I-20	
3	57291	BRACKET, GUY GRIP, HOG EAR	
1	46670	ARM, TWO POST INSULATORS	
3	14610	4" X 4" SQUARE CURVED WASHERS	
4	97710	INSULATOR, POST TYPE	
2	97650	INSULATOR, LINK STICK, 54"	
3	124730	SCREW, LAG	
1	122588	ROD, GROUND	
1	46675	ARM, 5' STEEL	
1		TIE, SPOOL I-20 (SIZE AS REQ.)	
10		DEADEND, GUY, PREFORMED, 3 Ø GROUND	
1		EYE BOLT, 5/8" AT REQUIRED LENGTH	
3		DEADEND SHOES, SIZE AS REQUIRED	
9		BOLT, MACHINE, 5/8" AT REQUIRED LENGTH	
1		TIE, PRIMARY, CEN. POSITION (SIZE AS REQ.)	
1		ANCHOR, SIZE & TYPE REQ. BY CONDITIONS	
2		ROD, ANCHOR (SIZE AS REQ.)	
2		DEADEND, DIST. GRIP SPOOL (SIZE AS REQ.)	
1		BOLT, 3/4" D.A. (SIZE AS REQ.)	
1		POLE, (SIZE AS REQUIRED)	
2		TIE, PRIMARY, SIDE TYPE (SIZE AS REQ.)	



Primary conductor separation is to be 36" if adjacent pole is framed horizontal.

C-3P,C-5
MAX. SPAN - 500'

STANDARD CONFIGURATION
PRIMARY LINE PULL-OFF
8" ARM

←DENOTES THE USE OF A PRE-DRILLED HOLE

DRAWN BY: H. BREHEN	REVISIONS	MARIETTA-BLW
SCALE: NOT TO SCALE		C-3P,C-5
DATE: 11-25-87	APPROVED BY: V. BLACKWOOD	

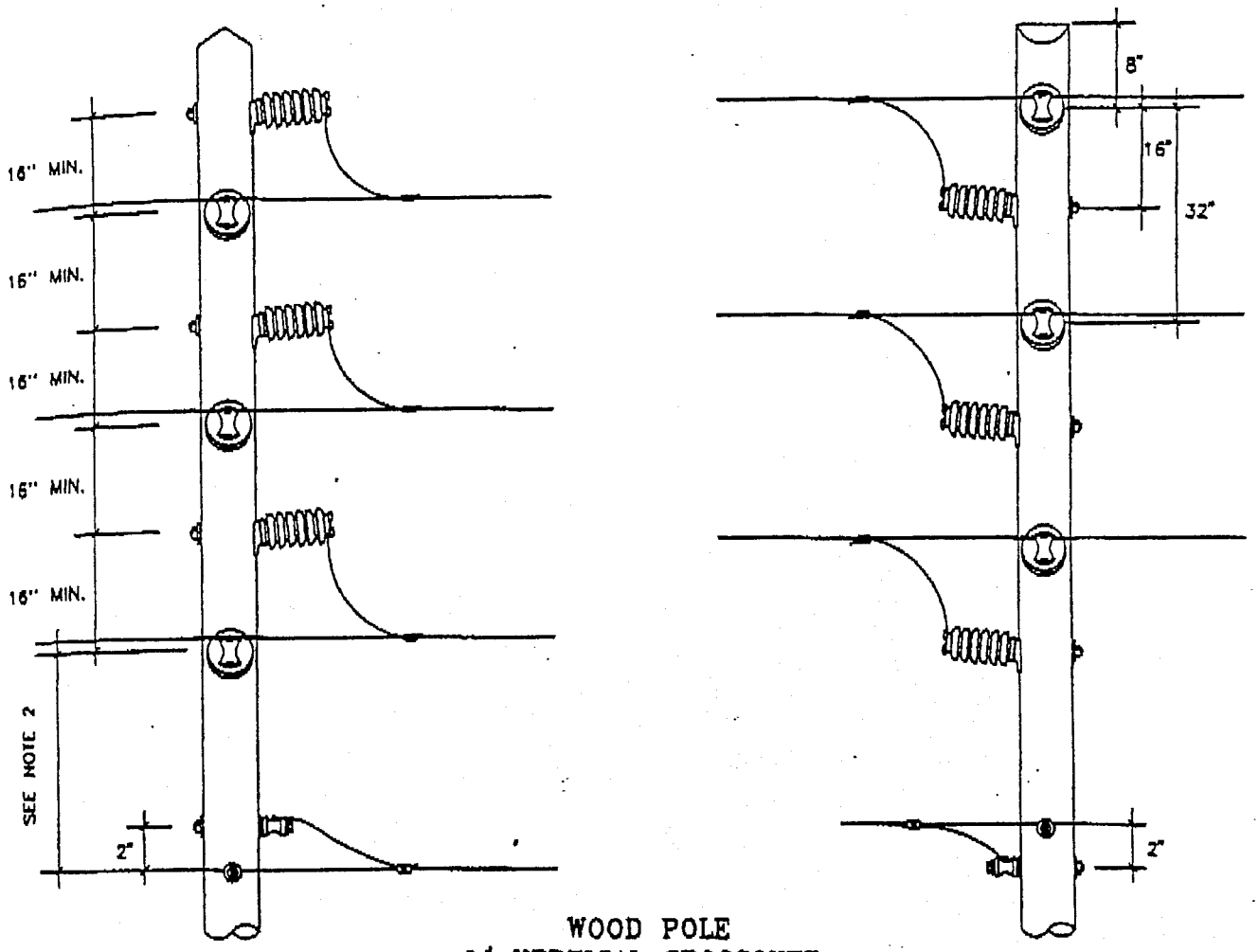
BILL OF MATERIAL
C-3P,C-5

14.4/24.9 KV, 3-PHASE
PRIMARY LINE PULL-OFF

QT. #	KEY #	MATERIAL	COST
9	96800	INSULATOR, SUSPENSION	
4	146100	4" X 4" SQUARE CURVED WASHERS	
13	146080	WASHERS, SQUARE, 2 1/2"	
1	97430	INSULATOR, SPOOL	
1	65650	CLEVIS, SECONDARY I-20	
4	57291	BRACKET, GUY GRIP, HOG EARS	
3	97650	INSULATOR, LINK STICK, 54"	
3	97710	INSULATORS, POST, TIE TOP	
3	58200	BRACKET, POST INSULATOR 8"	
4	124730	SCREW, LAG	
1	122588	ROD, GROUND	
2		ANCHOR, SIZE & TYPE REQ. BY CONDITIONS	
2		ROD, ANCHOR (SIZE AS REQ.)	
1		TIE, SPOOL I-20 (SIZE AS REQ.)	
3		DEADEND SHOES, SIZE AS REQUIRED	
11		BOLT, MACHINE, 5/8" AT REQUIRED LENGTH	
14		DEADEND, GUY, PREFORMED, 2 ⊕ GROUND	
3		TIE, PRIMARY, SIDE TYPE (SIZE AS REQ.)	
3		EYE BOLT, 5/8" AT REQUIRED LENGTH	
1		DEADEND, DIST GRIP SPOOL (SIZE AS REQ.)	
1		POLE, (SIZE AS REQUIRED)	

POST INSULATOR CONSTRUCTION
VERTICAL CROSSOVER WOOD POLE
13 & 23 kV

E-5.3.1



WOOD POLE
3ø VERTICAL CROSSOVER
FIGURE 1

NOTES:

1. ALL POST INSULATORS SHOWN ARE 35KV TIE TOP. USE CLAMP TOPS WHERE INDICATED BY ANGLE AND SIDE PULL LIMITATIONS SHOWN ON E-4. USE 45KV POST INSULATORS (CLAMP TYPE) ON 23KV CIRCUITS IN SALT CONTAMINATED AREAS.

2. PRIMARY TO NEUTRAL SEPARATION AT POLE IS DETERMINED BY MINIMUM MIDSPAN SEPARATION (DERM 4.4.1). IN NO CASE SHALL SEPARATION AT POLE BE LESS THAN 60" FOR WOOD POLES 40" FOR CONCRETE POLES.

3. "MINIMUM" DIMENSIONS MAY BE USED TO AVOID POLE CHANGEOUT OR EXCESSIVE GRADING TO A TALLER POLE.

SUPERSEDES E-5.3 LAST REVISED ON 3-1-89

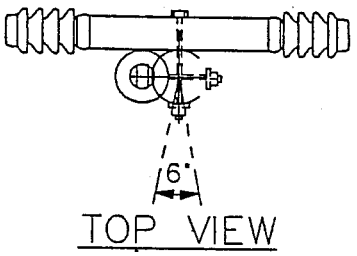
STANDARDS
OH & UG DISTRIBUTION SYSTEM
FLORIDA POWER & LIGHT COMPANY

NO.	DATE	REVISION	ORIG.	DR.	DES CHECKED	ODS CHECKED	APP.
1	MAR 15 1990	REVISED NOTE #2.		H.O.			

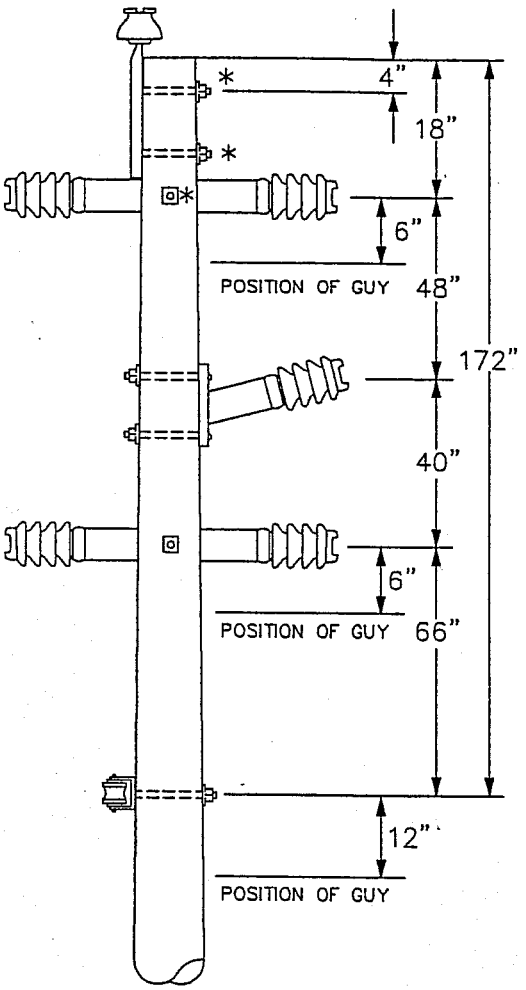
ORIG. A.R.R.
DRAWN: LOZADA/FILARDO
(DES) G.W.H. (ODS) JSB
CHECKED

NO SCALE
DATE: 1-1-81

APPROVED
R.K. CIELO
DIRECTOR, DISTRIBUTION ENGINEERING AND SERVICE PLANNING



TOP VIEW



. TIE TOP INSULATORS
0° – 6°

DOUBLE CIRCUIT CONSTRUCTION
STRAIGHT LINE & SMALL ANGLE

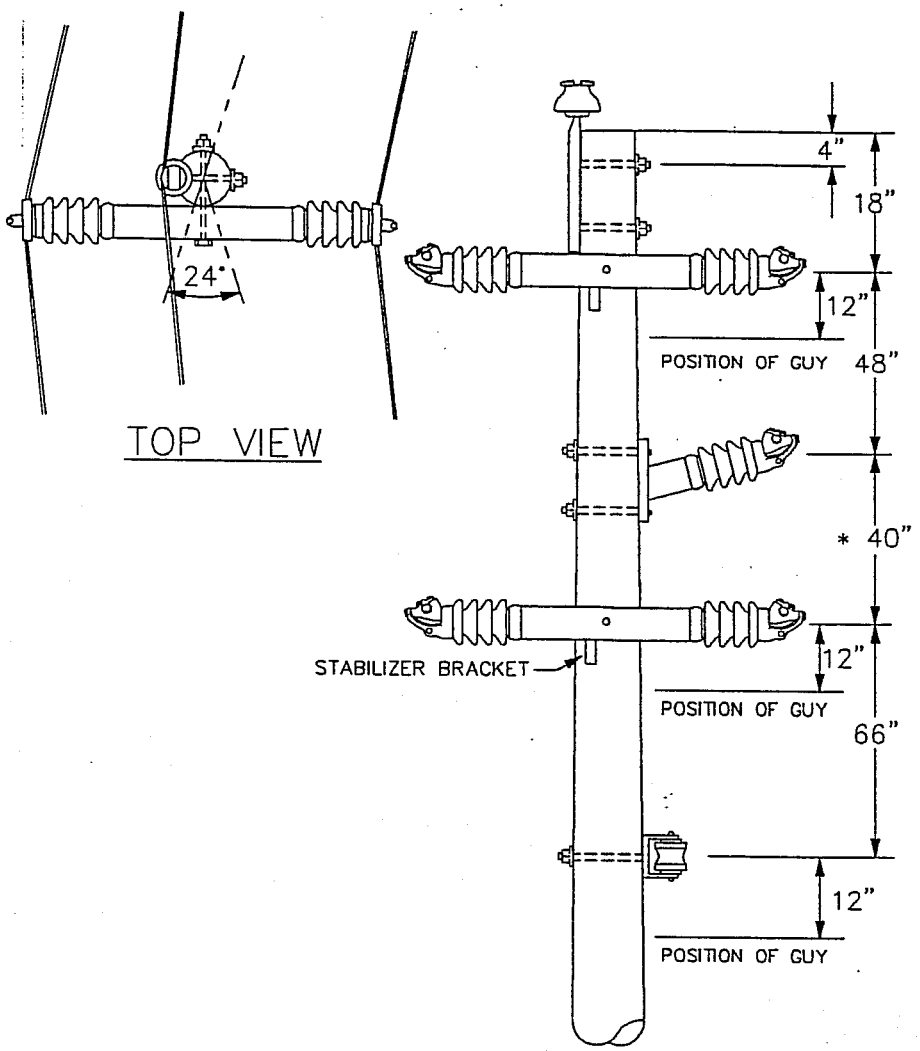
DC-C1

*—DENOTES THE USE OF A PRE-DRILLED HOLE

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		4.02

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
DOUBLE CIRCUIT CONSTRUCTION
STRAIGHT LINE & SMALL ANGLE
DC-C1 (4.02)

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	1		INSULATOR, SADDLE BACK	
	5		INSULATOR, POST TYPE, TIE TOP	
	1		PIN, POLE TOP	
	2		ARM, 2 POST INSULATOR, 36"	
	1		BRACKET, POST TYPE	
	7		WASHER, SQUARE, 2 1/2" X 2 1/2"	
	1		INSULATOR, SPOOL	
	1		CLEVIS, SECONDARY	
	5		STUDS, MOUNTING F/POST INSULATOR	
	7		BOLT, MACHINE, 5/8" AT REQUIRED LENGTH	
	7		NUT, LOCK 5/8"	



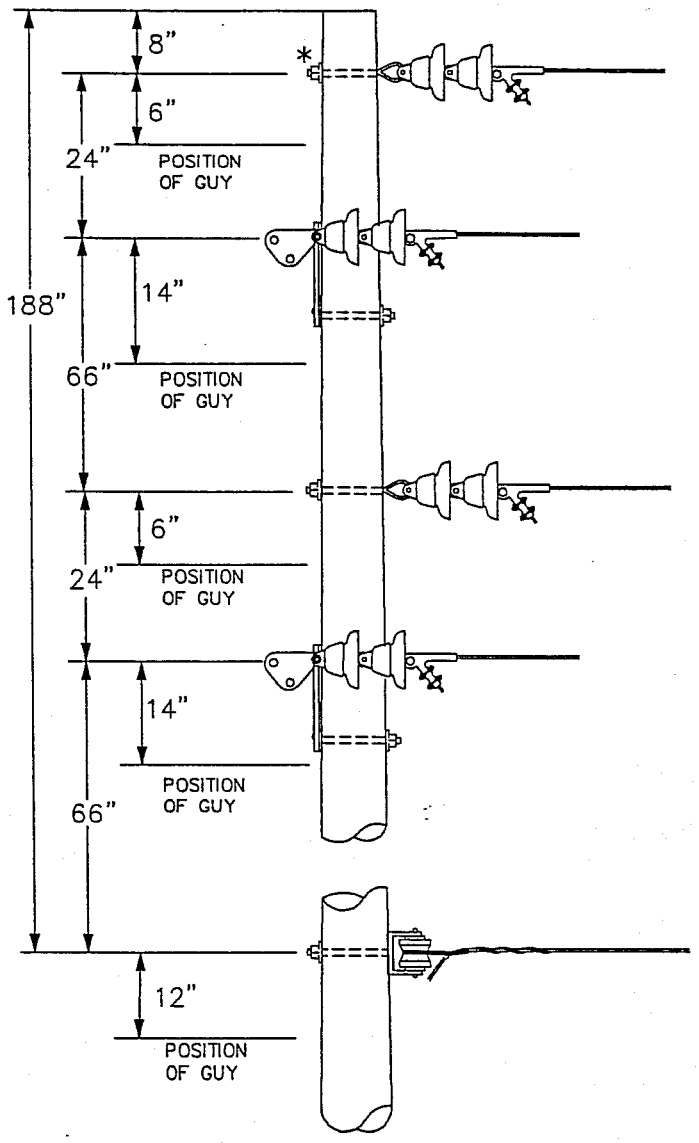
CLAMP TOP INSULATORS
6° – 24°

DOUBLE CIRCUIT CONSTRUCTION
STRAIGHT LINE & SMALL ANGLE

DC-C1P

NOTE:
* OPTIONAL 30"

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: OCTOBER, 1992		4.01



HORIZONTAL DEAD END
DOUBLE CIRCUIT DEAD END CONSTRUCTION

DC-C7

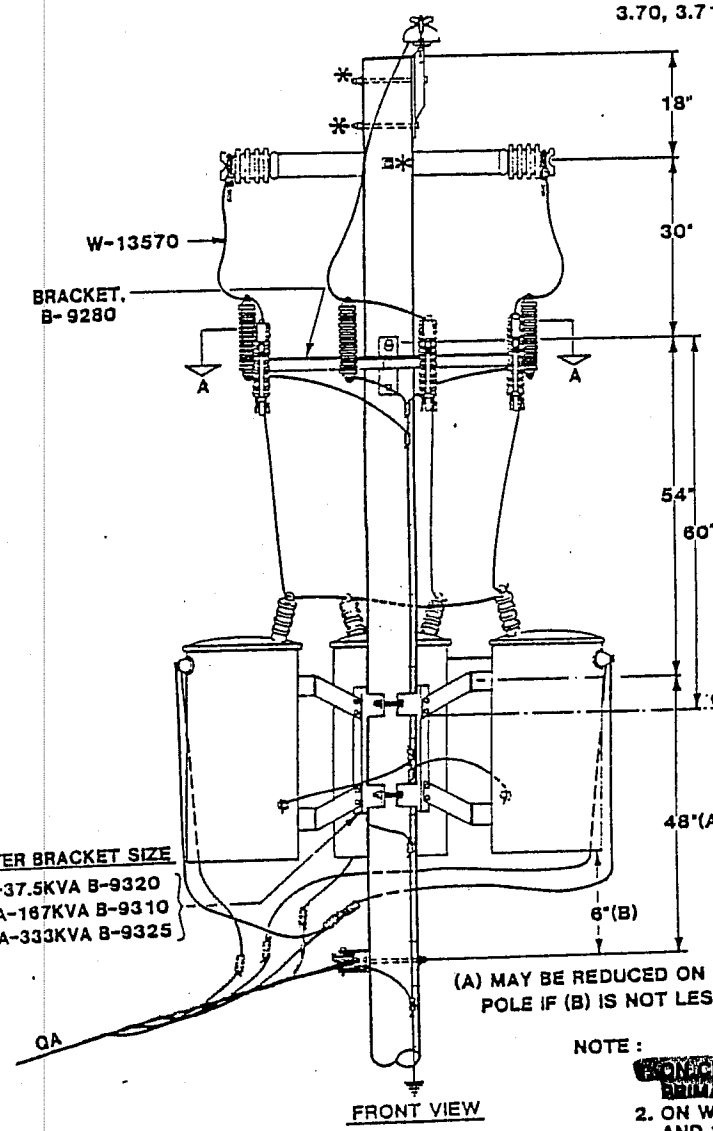
*—DENOTES THE USE OF A PRE-DRILLED HOLE

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		4.07

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
HORIZONTAL DEAD END
DOUBLE CURCUIT DEADEND CONSTRUCTION
DC-C7

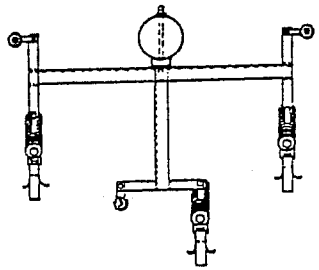
ITEM	QUANTITY	STOCK NO.	MATERIAL	
	12		INSULATOR, SUSPENSION	
	2		ARM, 5 FEET STEEL	
	2		EYE BOLT, 5/8" AT REQUIRED LENGTH	
	9		WASHERS, SQUARE, 2 1/2" X 2 1/2"	
	1		INSULATOR, SPOOL	
	1		CLEVIS, SECONDARY	
	6		DEADEND SHOES, SIZE AS REQUIRED	
	5		BOLT, MACHINE, 5/8" AT REQUIRED LENGTH	
	7		NUT, LOCK 5/8"	

FOR TRANSFORMER CONNECTIONS REFER TO PAGES
3.70, 3.71, 3.72, 7.33, 3.74

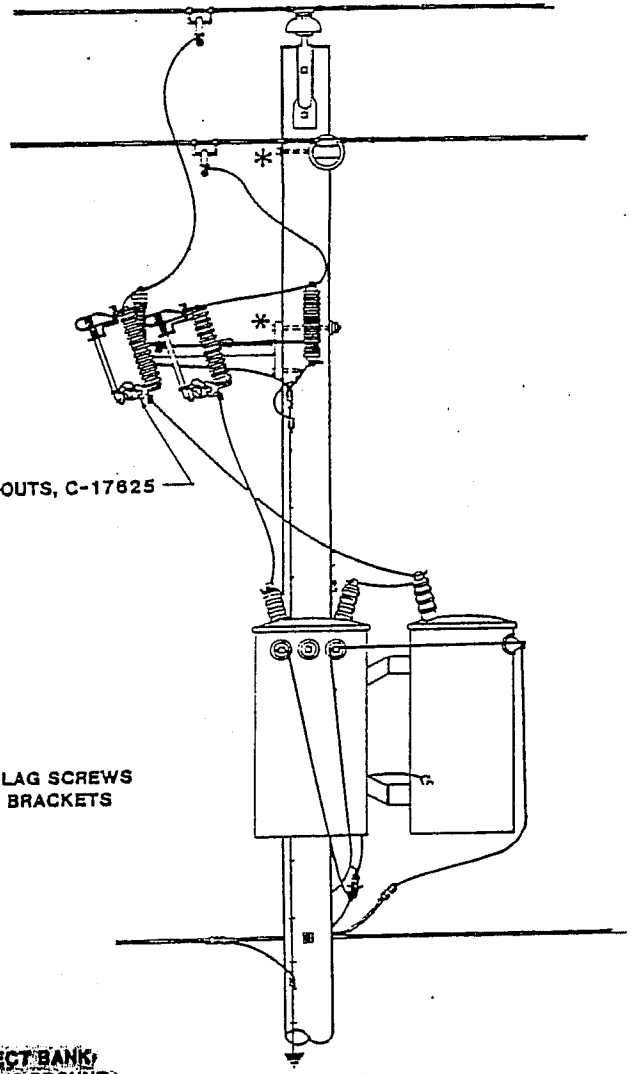


FRONT VIEW

(A) MAY BE REDUCED ON EXISTING POLE IF (B) IS NOT LESS THAN 6".



SECTION A - A



SIDE VIEW

DO NOT USE BOLTS OR LAG SCREWS ON ALUMINUM CLUSTER BRACKETS

NOTE :

1. ON CLOSED WYE-DELTA BANKS, DO NOT CONNECT BANK PRIMARY NEUTRAL TO SYSTEM NEUTRAL OR POLE GROUND.
2. ON WYE-WYE BANKS, CONNECT BANK PRIMARY NEUTRAL AND SECONDARY NEUTRAL TO SYSTEM NEUTRAL
3. FOR MULTIPLE SERVICES - USE COPPER TRANSFORMER LEADS.
4. FOR ONE SERVICE - CONNECT SERVICE CONDUCTOR TO TRANSFORMER BUSHINGS.

THREE TRANSFORMER INSTALLATION

*- DENOTES THE USE OF PRE-DRILLED HOLE.

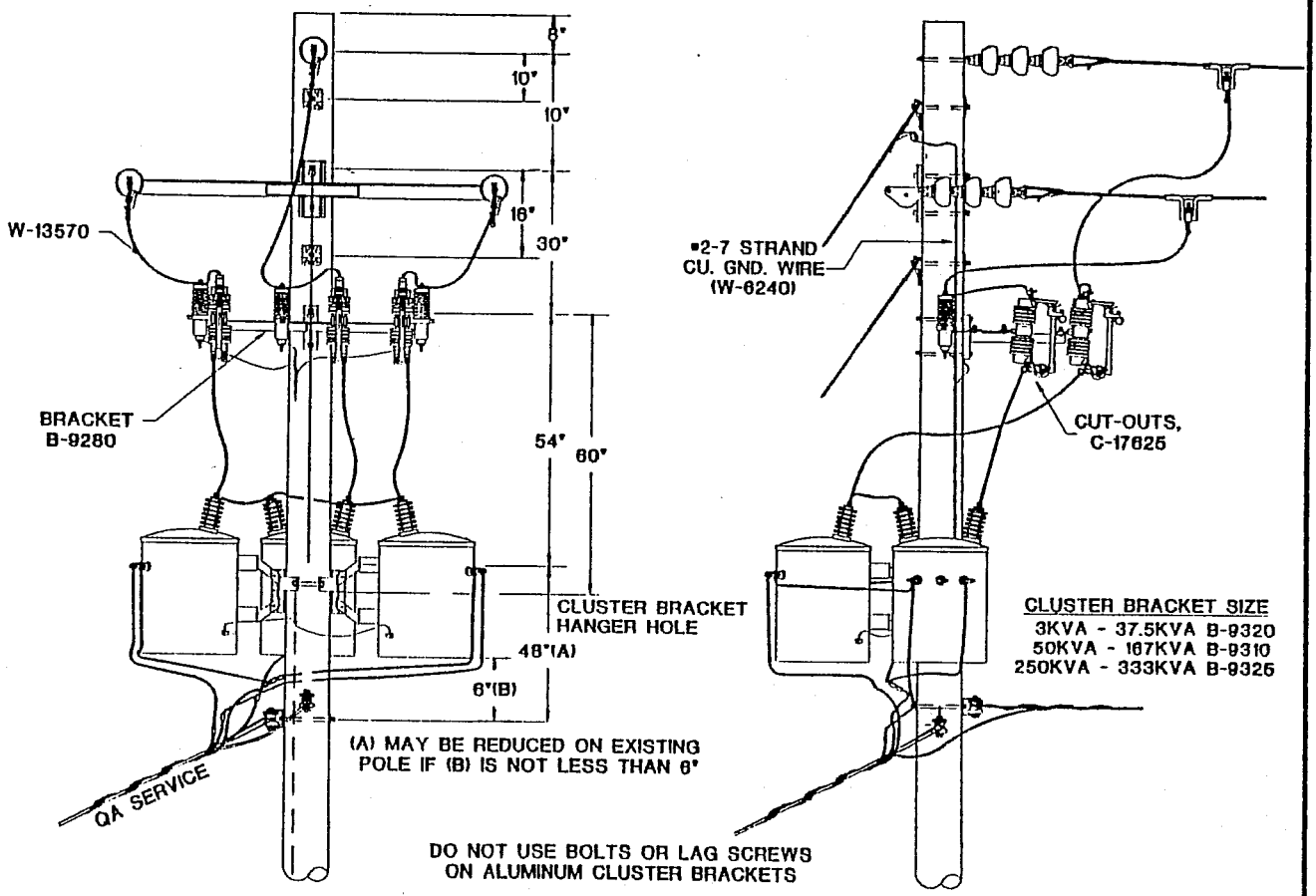
DRAWN BY A.A.W.B. DATE 12/18/81
TRACED BY A.A.W.B. SCALE NONE
APPROVED

REVISIONS 12-15-88 8-1-88
09-14-90

GEORGIA POWER COMPANY

C-428-GO

FOR TRANSFORMER CONNECTIONS REFER TO PAGES
73.70, 3.71, 3.72, 3.73, 3.74



NOTES

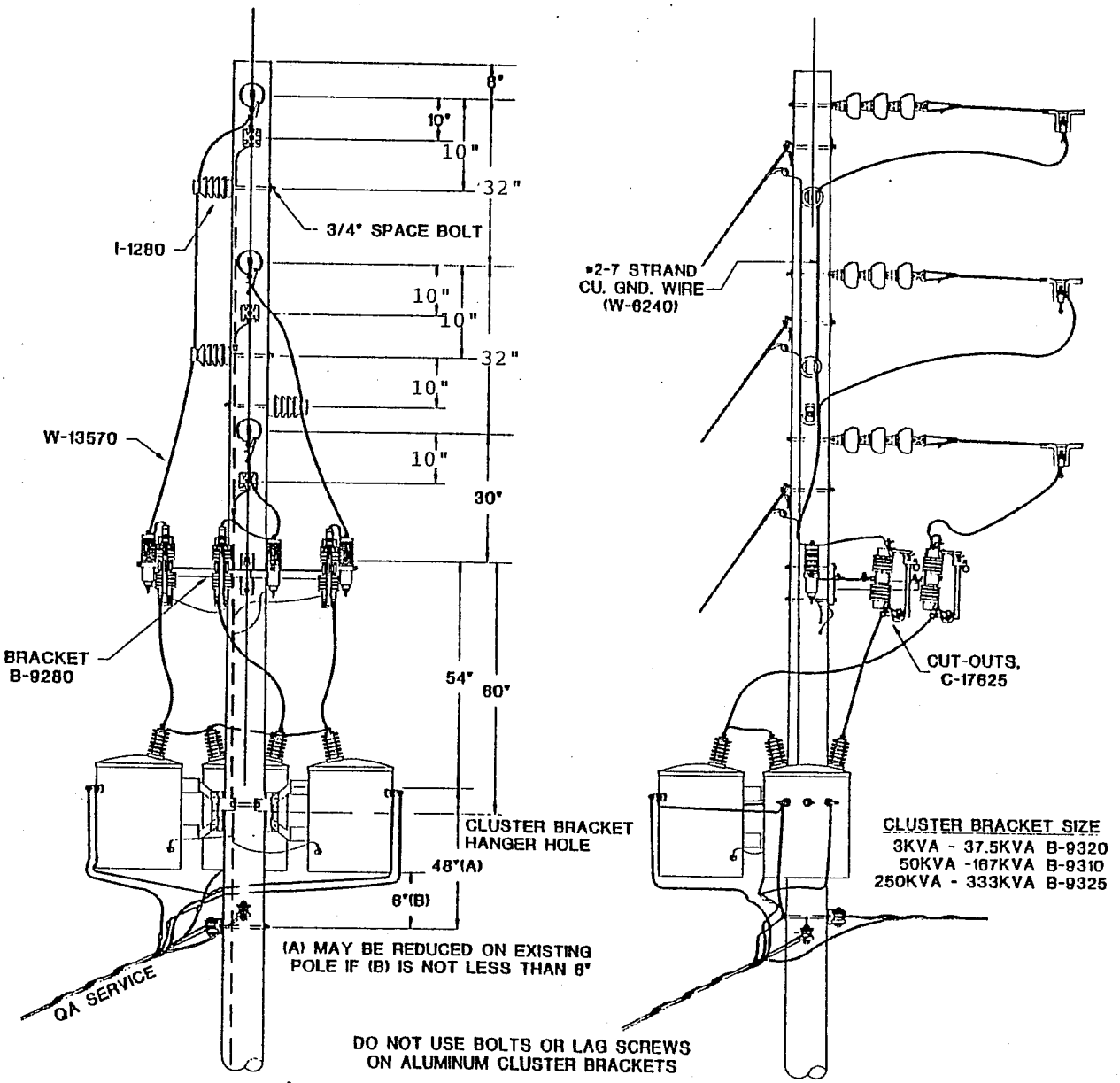
1. ON CLOSED WYE-DELTA BANKS, DO NOT CONNECT BANK PRIMARY NEUTRAL TO SYSTEM NEUTRAL OR POLE GROUND.
2. ON WYE-WYE BANKS, CONNECT BANK PRIMARY NEUTRAL AND SECONDARY NEUTRAL TO SYSTEM NEUTRAL.
3. FOR MULTIPLE SERVICES - USE COPPER TRANSFORMER LEADS.
4. FOR ONE SERVICE - CONNECT SERVICE CONDUCTOR TO TRANFORMER BUSHINGS.
5. ANCHOR GUY LEAD LENGTH SHOULD BE A MINIMUM OF 22 FEET.
6. SEE PAGE No. 1.90 FOR ANCHOR GUY AND GUY STRAIN INSULATOR INSTALLATION.

THREE TRANSFORMER INSTALLATION HORIZONTAL DEAD END POLE

• - DENOTES THE USE OF PRE-DRILLED HOLES.

DRAWN BY A.A.W.B. DATE 12-23-81 TRACED BY A.A.W.B. SCALE NONE APPROVED	REVISIONS 6-4-84 12-15-86 09-14-90	GEORGIA POWER COMPANY	COM00061

FOR TRANSFORMER CONNECTIONS REFER TO PAGES
73.70, 3.71, 3.72, 3.73, 3.74



NOTES

1. ON CLOSED WYE-DELTA BANKS, DO NOT CONNECT BANK PRIMARY NEUTRAL TO SYSTEM NEUTRAL OR POLE GROUND.
2. ON WYE-WYE BANKS, CONNECT BANK PRIMARY NEUTRAL AND SECONDARY NEUTRAL TO SYSTEM NEUTRAL.
3. FOR MULTIPLE SERVICES - USE COPPER TRANSFORMER LEADS.
4. FOR ONE SERVICE - CONNECT SERVICE CONDUCTOR TO TRANFORMER BUSHINGS.
5. ANCHOR GUY LEAD LENGTH SHOULD BE A MINIMUM OF 22 FEET.
6. SEE PAGE No. 1.90 FOR ANCHOR GUY AND GUY STRAIN INSULATOR INSTALLATION.

THREE TRANSFORMER INSTALLATION
VERTICAL DEAD END POLE

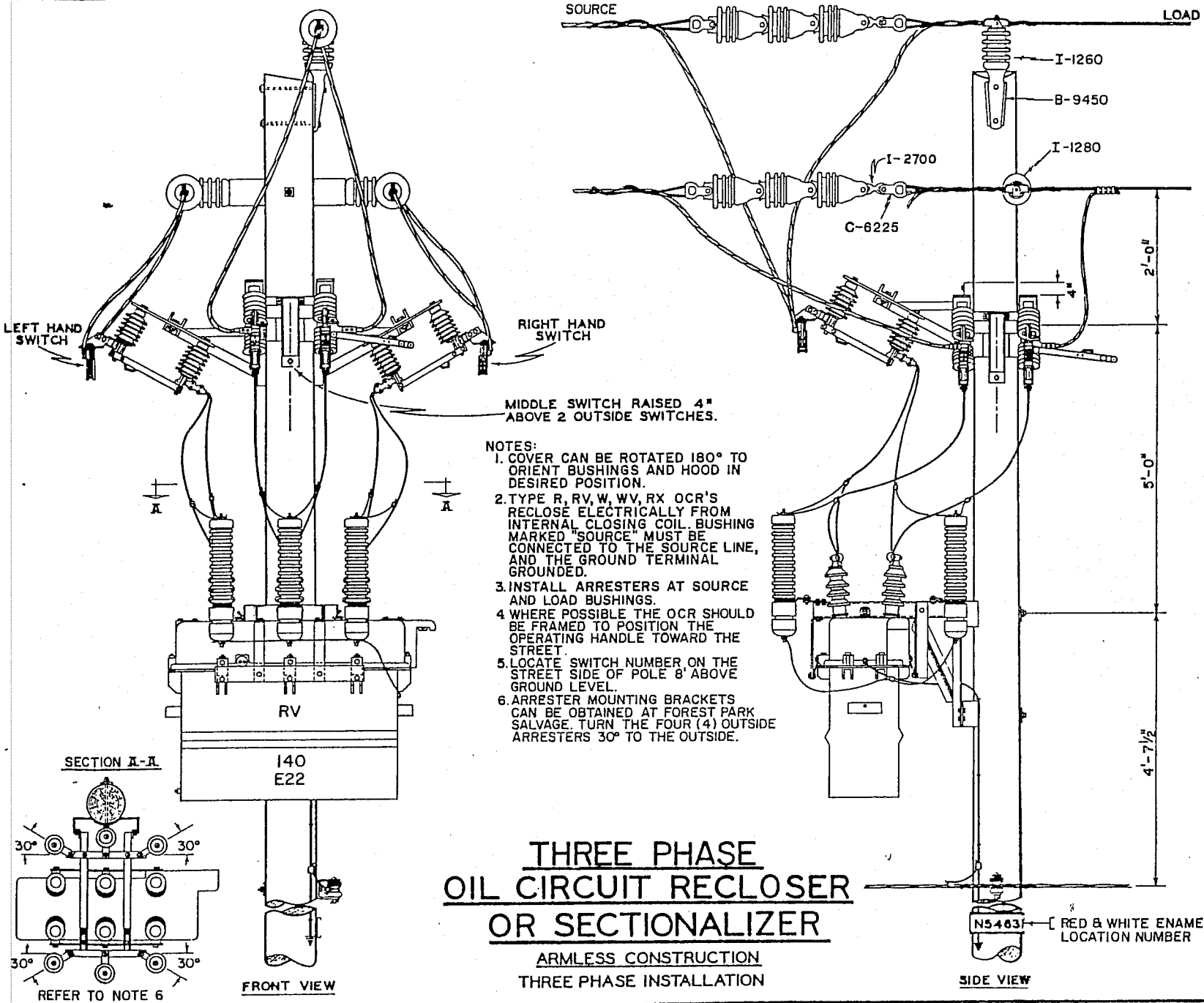
• - DENOTES THE USE OF PRE-DRILLED HOLES.

DRAWN BY A.A.W.B.	DATE 12-23-81	REVISIONS 6-4-84 12-15-86 09-14-90	GEORGIA POWER COMPANY
TRACED BY A.A.W.B.	SCALE NONE		COM00062
APPROVED C.C. Bleathley			

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
OIL CIRCUIT RECLOSER WITH BY-PASS

M3-23A

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	4		INSULATOR, SUSPENSION	
	1		CUTOUT, SOLID BLADE OR FUSED NLB W/LB UNIT	
	1		LIGHTNING ARRESTER 9 kV	
	2		CLAMPS, DEADEND, SIZE AS REQUIRED	
	1		RECLOSER, SIZE AS REQUIRED	
	3		BOLT, MACHINE 5/8" AT REQUIRED LENGTH	
	5		WASHER, SQUARE 2 1/2" X 2 1/2"	
	4		NUT, LOCK 5/8"	
	4		CLAMP, HOT LINE A/P ALUM. OR COPPER	
	1		NUT, EYE 5/8"	
	1		BOLT, EYE, AT REQUIRED LENGTH	
	2		STIRRUPS, SIZE AS REQUIRED	
	1		SCREW, LAG 6"	
	1		T-HANGER BRACKET	



NOTES:
1. COVER CAN BE ROTATED 180° TO ORIENT BUSHINGS AND HOOD IN DESIRED POSITION.
2. TYPE R, RV, W, WV, RX OCR'S RECLOSE ELECTRICALLY FROM INTERNAL CLOSING COIL. BUSHING MARKED "SOURCE" MUST BE CONNECTED TO THE SOURCE LINE, AND THE GROUND TERMINAL GROUNDED.
3. INSTALL ARRESTERS AT SOURCE AND LOAD BUSHINGS.
4. WHERE POSSIBLE THE OCR SHOULD BE FRAMED TO POSITION THE OPERATING HANDLE TOWARD THE STREET.
5. LOCATE SWITCH NUMBER ON THE STREET SIDE OF POLE 8' ABOVE GROUND LEVEL.
6. ARRESTER MOUNTING BRACKETS CAN BE OBTAINED AT FOREST PARK SALVAGE. TURN THE FOUR (4) OUTSIDE ARRESTERS 30° TO THE OUTSIDE.

THREE PHASE OIL CIRCUIT RECLOSER OR SECTIONALIZER

ARMLESS CONSTRUCTION

THREE PHASE INSTALLATION

DRAWN BY J.W.S. & C.S.J. DATE 4-25-75
TRACED BY C.S.J. SCALE NONE
APPROVED

REVISIONS 1-1-76, 1-10-79, 12-15-86

GEORGIA POWER COMPANY

C-395-GO

PAGE 4.33

DETAIL NO. 1

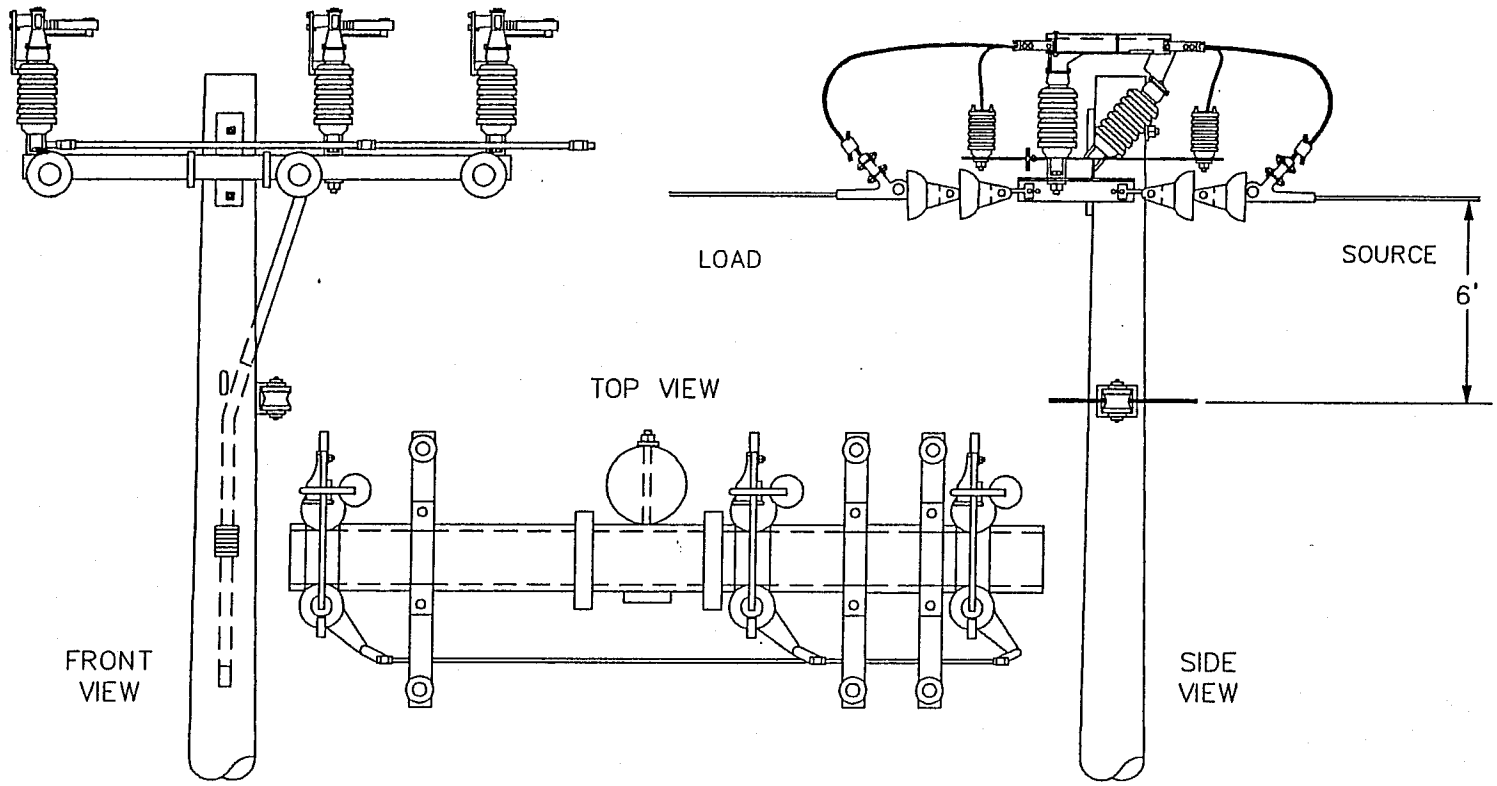
WER ENGINEERING ASSOCIATES, INC.
MARIETTA, GA.

DATE: MARCH, 1991

REVISIONS

ELECTRIC CITIES OF GEORGIA

6.03



This switch is to be used only between two existing horizontal assemblies.

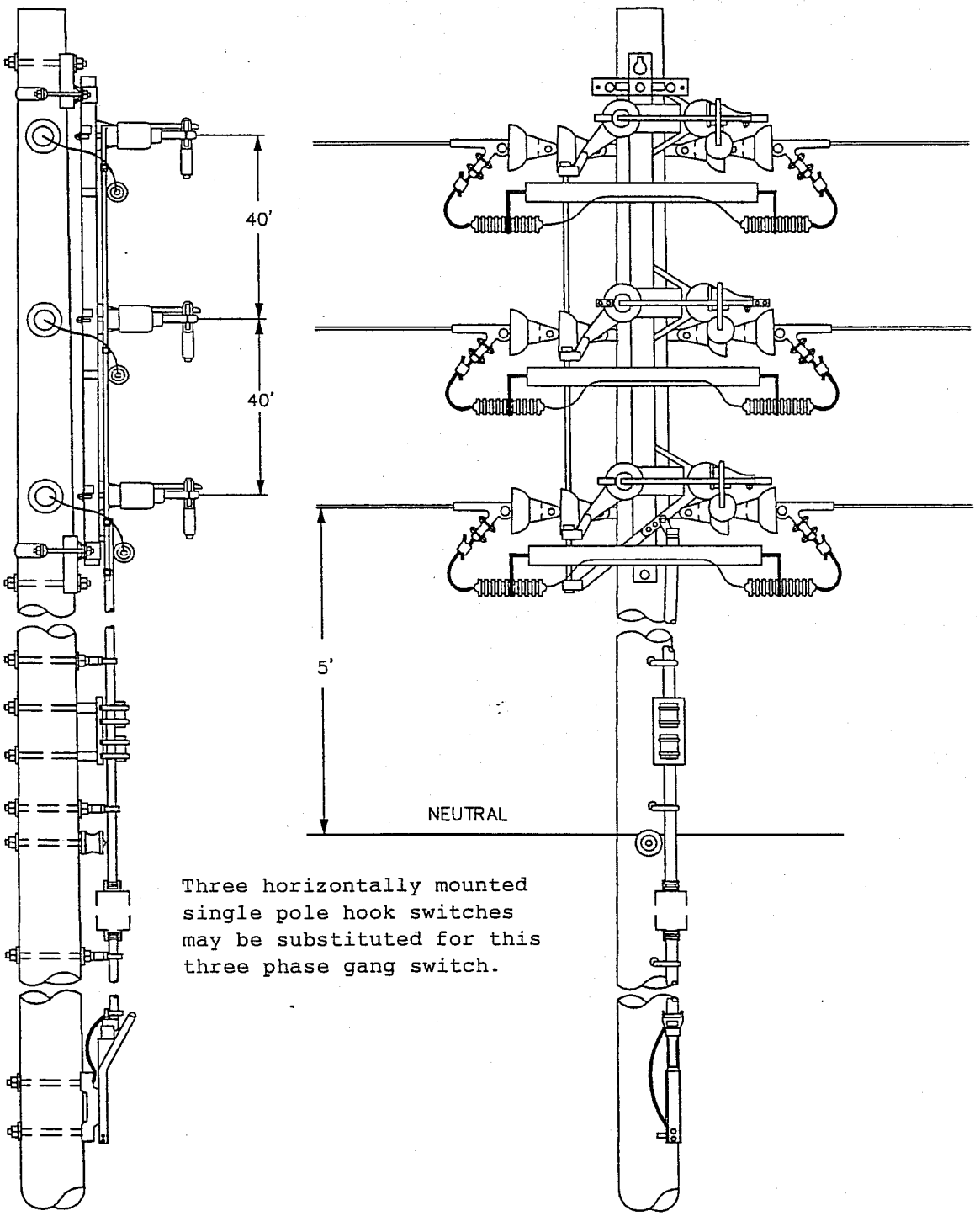
M3-15

THREE PHASE GANG OPERATED HORIZONTAL SWITCH

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
THREE PHASE GANG OPERATED
HORIZONTAL SWITCH

M3-15

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	6		ARRESTER, 9 kV METAL OXIDE	
	12		INSULATOR, SUSPENSION	
	1		SWITCH, 3 PHASE GANG OPERATED	
	6		DEADEND SHOES, SIZE AS REQUIRED	



Three horizontally mounted single pole hook switches may be substituted for this three phase gang switch.

THREE PHASE GANG OPERATED VERTICAL SWITCH

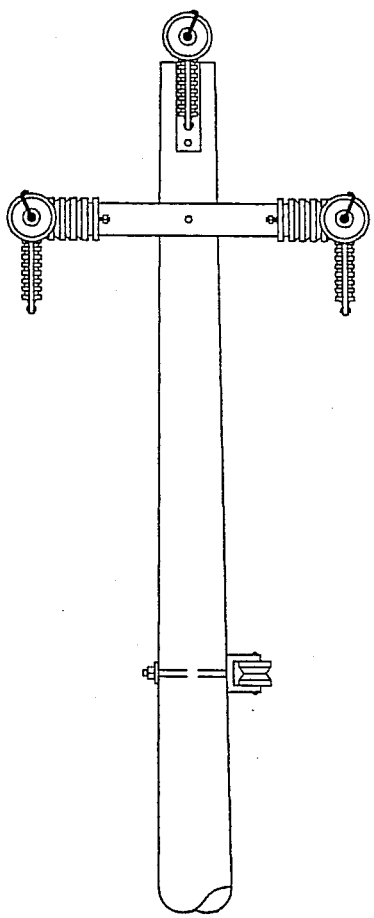
M3-15V

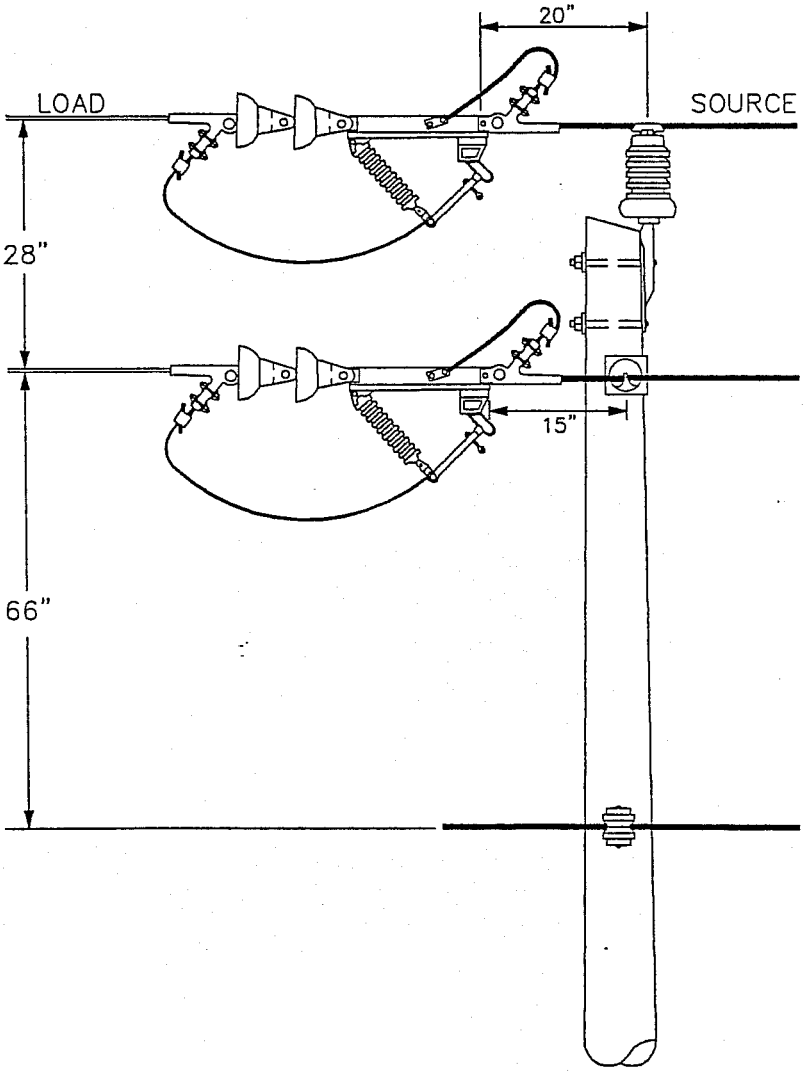
JWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		6.04

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
THREE PHASE GANG OPERATED
VERTICAL SWITCH

M3-15V

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	1		SWITCH, 3 PHASE GANG OPERATED VERTICAL	
	12		INSULATOR, SUSPENSION	
	6		ARRESTER, 9 kV METAL OXIDE	
	6		DEADEND SHOES, SIZE AS REQUIRED	





FRONT VIEW

SIDE VIEW

BRIDGES IN-LINE SWITCHES

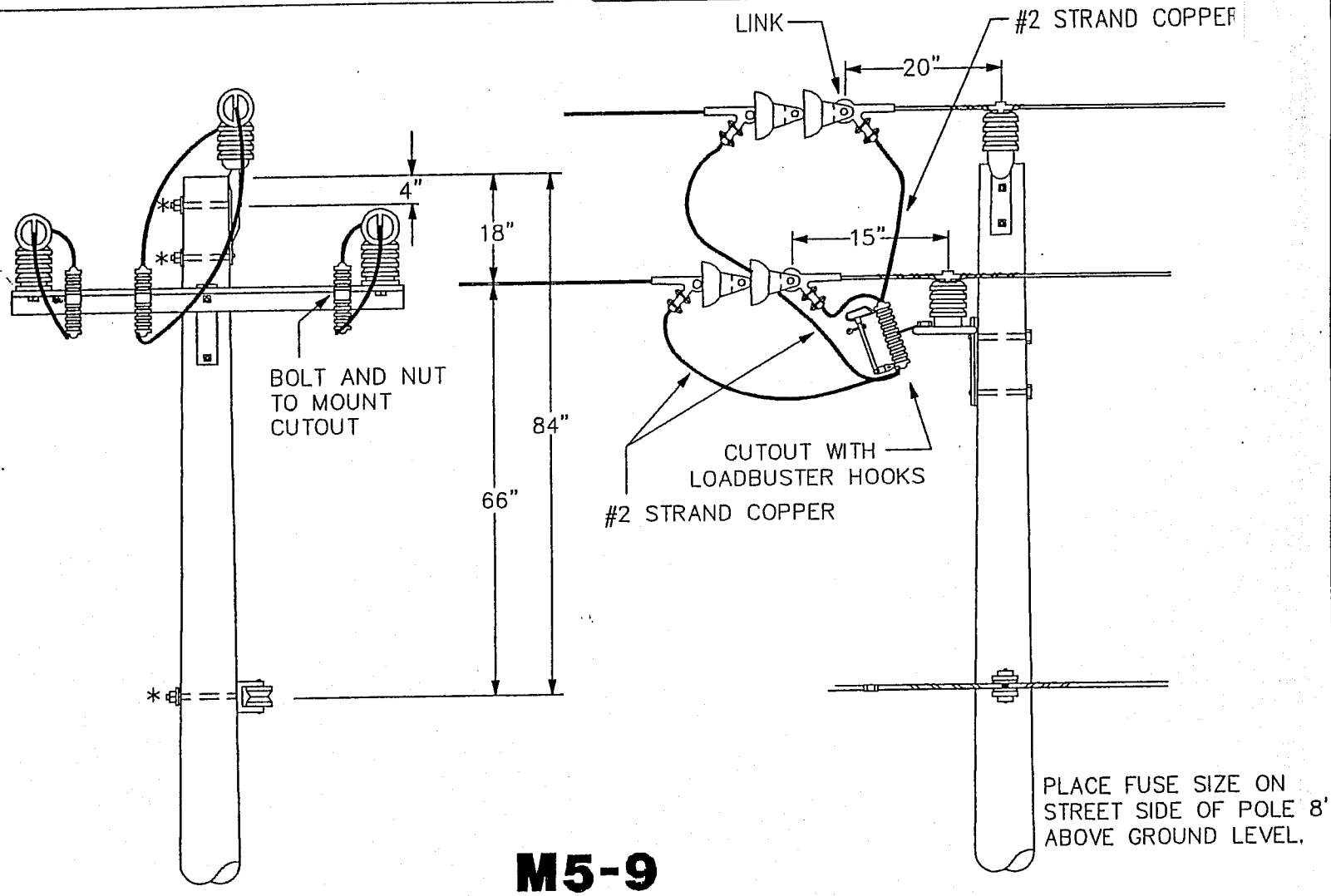
M3-3S

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		6.02

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
BRIDGES IN-LINE SWITCHES

M3-3S

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	3		SWITCH, IN-LINE DISC UNDERSLUNG	
	6		DEADEND SHOES, SIZE AS REQUIRED	
	6		INSULATORS, SUSPENSION	
	1		PIN, POLE TOP F/POST INSULATOR	
	1		POST INSULATOR/CLAMP TYPE VERTICAL	
	3		CLAMP, F/POST INSULATOR, SIZE AS REQUIRED	
	1		ARM, 2 POST 36"	
	2		POST INSULATOR/CLAMP TYPE HORIZONTAL	
	3		STUDS, MOUNTING F/POST INSULATOR	
	6		CONNECTOR, COMPRESSION TWO BOLT	
	4		NUT, LOCK 5/8"	
	4		WASHER, SQUARE 2 1/2" X 2 1/2"	
	1		INSULATORS, SPOOL	
	1		SECONDARY, CLEVIS	
	4		BOLT, MACHINE 5/8", AT REQUIRED LENGTH	



M5-9

INSTALLATION OF SECTIONALIZING SWITCHES FUSED TYPE

NOTE:
1. MAXIMUM PULL OFF CONDUCTOR SIZE – 1/0 ACSR.
2. USE CUTOUTS WITH LOADBUSTER HOOKS ONLY.
3. IF NORMAL OPEN POINT, REMOVE FUSE BARRELS AND STORE IN UPRIGHT POSITION ON POLE.

*–DENOTES THE USE OF A PRE-DRILLED HOLE

POWER ENGINEERING ASSOCIATES, INC.
MARIETTA, GA.

DATE: MARCH, 1991

REVISIONS

ELECTRIC CITIES OF GEORGIA

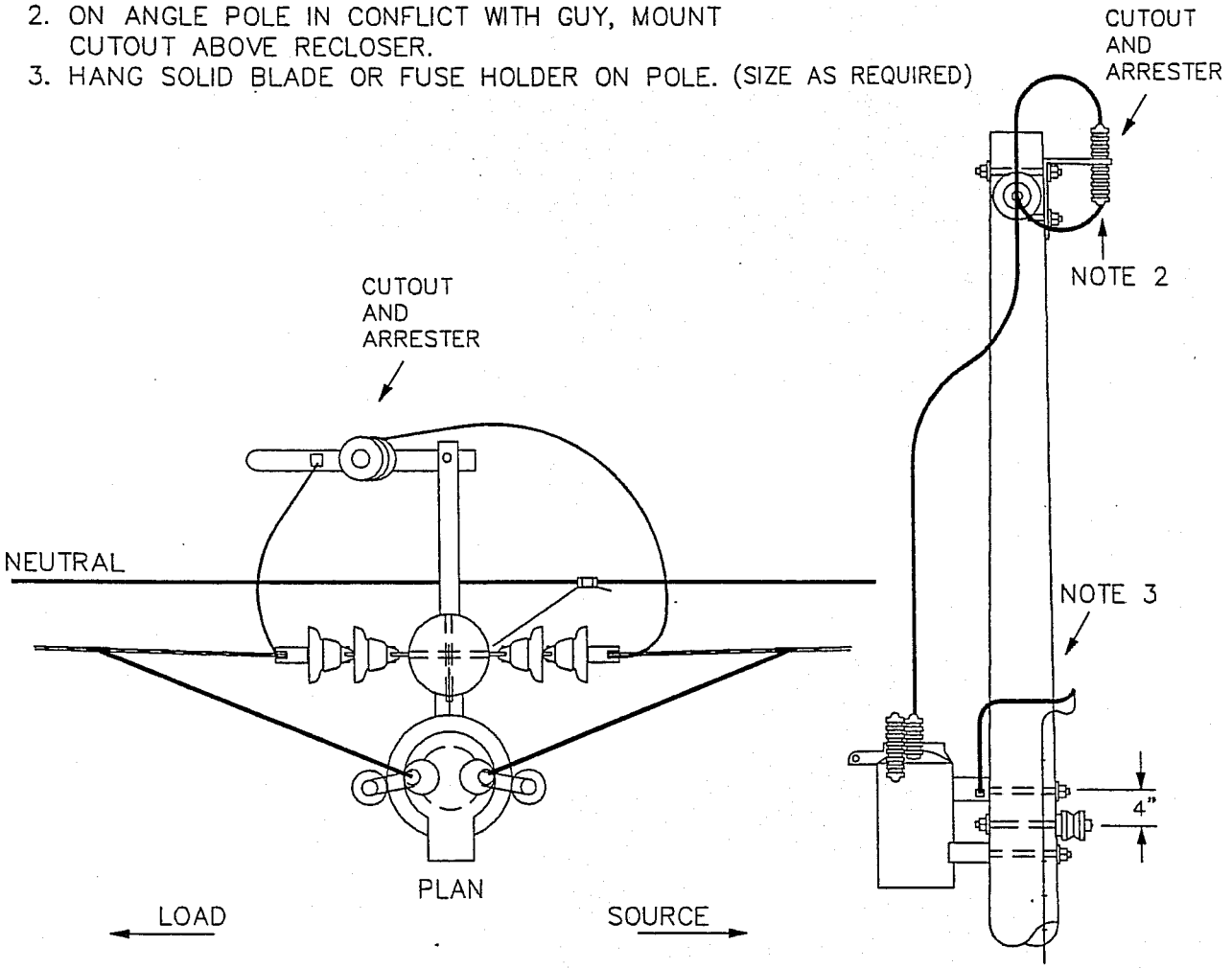
6.07

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
INSTALLATION OF SECTIONALIZING SWITCHES
FUSED TYPE
M5-9

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	6		INSULATOR, SUSPENSION	
	3		INSULATOR, POST TYPE VERTICAL	
	1		PIN, POLE TOP, F/POST INSULATOR	
	1		ARM, 6'-6" STEEL	
	1		CLEVIS, SECONDARY	
	1		INSULATOR, SPOOL	
	6		DEADEND SHOES, SIZE AS REQUIRED	
	3		CLAMP, BUTTERFLY, SIZE AS REQUIRED	
	5		BOLT, MACHINE, 5/8" SIZE AS REQUIRED	
	3		CUTOUT, 100A OPEN TYPE	
	3		STUDS, MOUNTING F/POST INSULATOR	
	3		BOLT, 1/2" x 3" F/MOUNTING CUTOUTS	
	5		WASHERS, SQUARE 2 1/2" x 2 1/2"	

NOTE:

1. THE TERMINAL BUSHING CONNECTED DIRECTLY TO THE COIL SHOULD BE CONNECTED TO THE SOURCE. WHERE NECESSARY TO PROVIDE FOR THIS CONNECTION THE RECLOSER MAY BE MOUNTED ON THE OTHER SIDE OF THE POLE AND THE NEUTRAL DEADENDED.
2. ON ANGLE POLE IN CONFLICT WITH GUY, MOUNT CUTOUT ABOVE RECLOSER.
3. HANG SOLID BLADE OR FUSE HOLDER ON POLE. (SIZE AS REQUIRED)



OIL CIRCUIT RECLOSER WITH BY-PASS

M3-23A

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		6.05

Appr. 130 % Rated KVA

Kearney Type KS

% KVA

Not used

2.08
3.47
5.20
6.94
10.41
13.88
20.83
23.19

TABLE 1

PRIMARY FUSE SIZE FOR SINGLE-PHASE TRANSFORMER

INDIVIDUAL TRANSFORMER SIZE - KVA	TRANSFORMER AND SYSTEM VOLTAGE - KV						
	2.4	4.8	7.2	8.0	12.0	13.8	14.4
	2.4Δ 2.4/4Y	4.8Δ 4.8/8.3Y	7.2/12	8/13.8Y	12.0Δ 7.2/12Y 12.0/20.0	8.0/13.8Y	14.4/25Y
3	2	1	1	1	1	1	1
5	3	1.5	1	1	1	1	1
7.5	5	2.5	1.5	1.5	1	1	1
10	7	3	2	2	1.5	1	1
15	10	5	3	3	2	2	1.5
25	15	7	5	5	3	3	2.5
37.5	25	10	7	7	5	4	4
50	30	15	10	10	7	5	5
75	50	25	15	15	10	7	7
100	65	30	20	20	15	10	10
150	80	50	25	25	20	15	15
167	80	50	30	25	20	15	15

↑ 7200 volt

TABLE 2

PRIMARY FUSE SIZE FOR THREE-PHASE BANKS

Not s

INDIVIDUAL TRANSFORMER SIZE - KVA	SYSTEM VOLTAGE - KV					
	2.4 CLOSED Δ	4.0Y 4.8 Δ 2.4OPENΔ	4.8 OPEN Δ 8.3Y	12.0 Y OR Δ 13.8 Y OR Δ	12.0 OPENΔ 20.0	25Y 13.8 OPEN Δ
3	4	2	1	1	1	1
5	5	3	1.5	1	1	1
7.5	10	5	2.5	1.5	1	1
10	10	7	3	2	1.5	1
15	15	10	5	3	2	1.5
25	25	15	7	5	3	2.5
37.5	40	25	10	7	5	4
50	50	30	15	10	7	5
75	65	50	25	15	10	7
100	80	65	30	20	15	10
150	100	80	50	25	20	15
167	100	80	50	30	20	15
250	-	-	-	40	30	20

NOTE:
WHEN ONE FUSE IS BLOWN ON AN INSTALLATION, INSTALL NEW FUSE LINKS IN ALL PHASES OF THAT INSTALLATION.

PRIMARY FUSE SIZE FOR DISTRIBUTION TRANSFORMERS KEARNEY FUSE LINKS

RAWN BY C.D.O.	DATE 2-1-66	REVISIONS 2-14-72, 7-6-77	GEORGIA POWER COMPANY
RACED BY C.S.J.	SCALE NONE		A-368-GO
PPROVED	KRC 2-24-72		

Joe
From PE study.
Same as GPC chart.
JCB

CITY OF LAGRANGE ELECTRIC SYSTEM

TRANSFORMER FUSE CHART
USE ONLY TYPE "KS" FUSES

SINGLE PHASE AND IN BANKS

SIZE KVA	12.47/7.2 KV FUSE AMPS
5	1
10	2
15	3
25	5
37	7
50	10
75	15
100	20
150	25
167	30
333	35
500	50

THREE PHASE

SIZE KVA	12.47/7.2 KV FUSE AMPS
150	8
300	15
500	25
750	30
1000	35
1500	50
2500	80

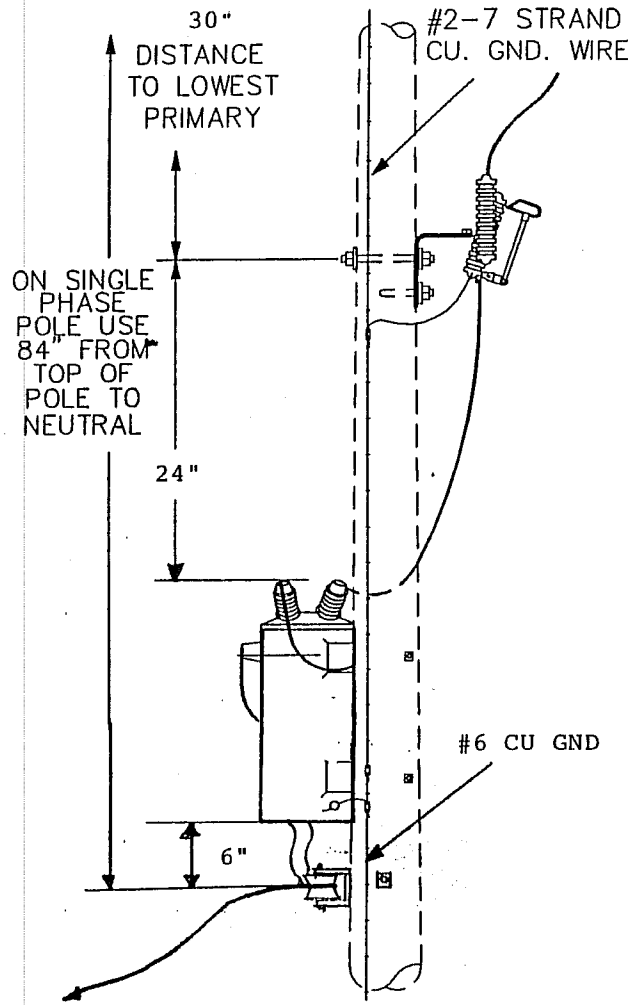
JWER ENGINEERING ASSOCIATES, INC.
MARIETTA, GA.

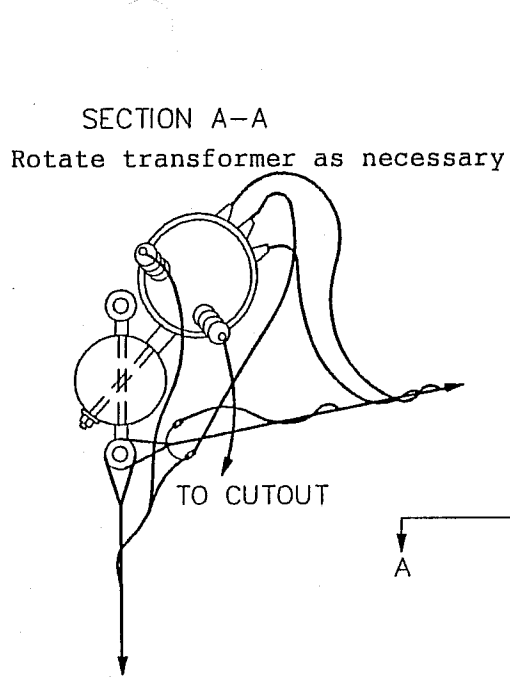
DATE: MARCH, 1991

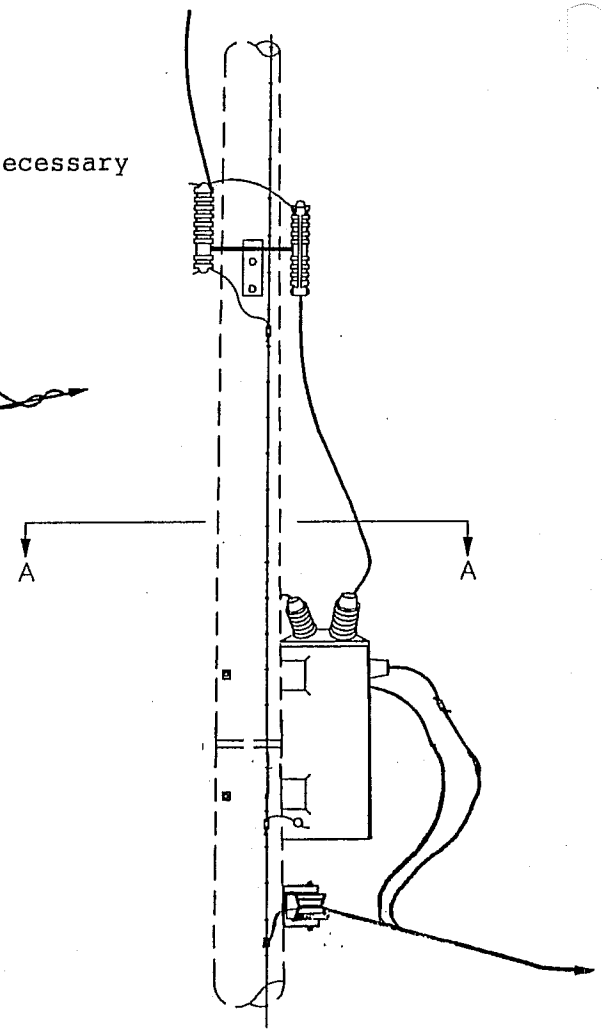
REVISIONS

ELECTRIC CITIES OF GEORGIA

7.01







SECONDARY LEAD SIZE

TRANS. SIZE	MIN. LEAD SIZE
15 KVA	1/0 CU.
25 KVA	1/0 CU.
37.5 KVA	2/0 CU.
75 KVA	4/0 CU.
100 KVA	500 CU.

G110

SINGLE TRANSFORMER INSTALLATION

NOTES:

1. CONNECT TRANSFORMER SECONDARY NEUTRAL LEAD TO SYSTEM AND LEAVE APPROXIMATELY 12 INCH TAIL FOR SERVICE NEUTRAL CONNECTIONS.
2. IF ONLY ONE SERVICE IS TO BE INSTALLED, THE SERVICE NEUTRAL SHOULD BE CONNECTED TO THE SYSTEM NEUTRAL AND TERMINATED AT THE TRANSFORMER SECONDARY NEURTAL TERMINAL WITH A SERV-EN ADAPTER, THE PHASE CONDUCTORS SHOULD BE CONNECTED TO THE TRANSFORMER SECONDARY TERMINALS WITH SERV-EN ADAPTORS.
3. IF SECONDARY IS TO EXTEND IN LINE, EXTEND PRIMARY WIRE TO ELIMINATE CONFLICT BETWEEN SECONDARY AND ANCHOR GUY. IF IT IS NOT DESIRABLE TO EXTEND PRIMARY INSTALL SPAN GUY TO NEXT POLE.

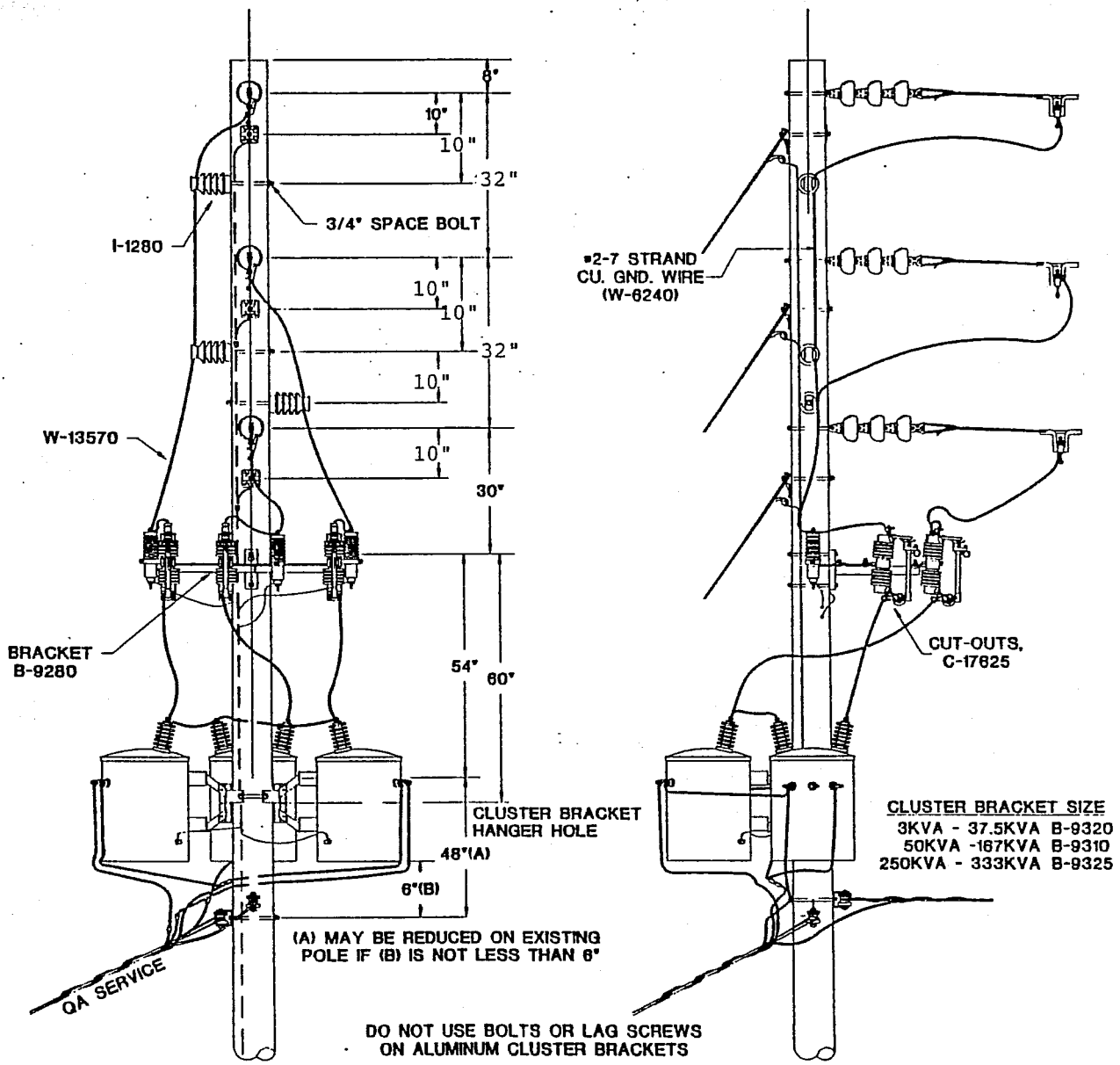
* 4. Separation between bottom phase and neutral will be 72" minimum.

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES

SINGLE TRANSFORMER INSTALLATION DEADEND POLE

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	1		BRACKET, T-HANGER	
	1		ARRESTOR, LIGHTING	
	1		CUTOUT, 100A OPEN TYPE	
	1		CLEVIS, SECONDARY	
	1		SCREW, LAG 1/2" X 6"	
	3		WASHER, SQUARE 2 1/2 X 2 1/2"	
	1		INSULATOR, SPOOL	
	1		TRANSFORMER, SIZE AS REQUIRED	
	3		BOLT, MACHINE 5/8" SIZE AS REQUIRED	
	1		GUARD, SQUIRREL	

FOR TRANSFORMER CONNECTIONS REFER TO PAGES
3.70, 3.71, 3.72, 3.73, 3.74



NOTES

1. ON CLOSED WYE-DELTA BANKS, DO NOT CONNECT BANK PRIMARY NEUTRAL TO SYSTEM NEUTRAL OR POLE GROUND.
2. ON WYE-WYE BANKS, CONNECT BANK PRIMARY NEUTRAL AND SECONDARY NEUTRAL TO SYSTEM NEUTRAL.
3. FOR MULTIPLE SERVICES - USE COPPER TRANSFORMER LEADS.
4. FOR ONE SERVICE - CONNECT SERVICE CONDUCTOR TO TRANFORMER BUSHINGS.
5. ANCHOR GUY LEAD LENGTH SHOULD BE A MINIMUM OF 22 FEET.
6. SEE PAGE No. 1.90 FOR ANCHOR GUY AND GUY STRAIN INSULATOR INSTALLATION.

THREE TRANSFORMER INSTALLATION
VERTICAL DEAD END POLE

• - DENOTES THE USE OF PRE-DRILLED HOLES.

DRAWN BY A.A.W.B.	DATE 12-23-81	REVISIONS 6-4-84 12-15-86	GEORGIA POWER COMPANY
TRACED BY A.A.W.B.	SCALE NONE	09-14-90	COM00062
APPROVED C.C. Blankley			

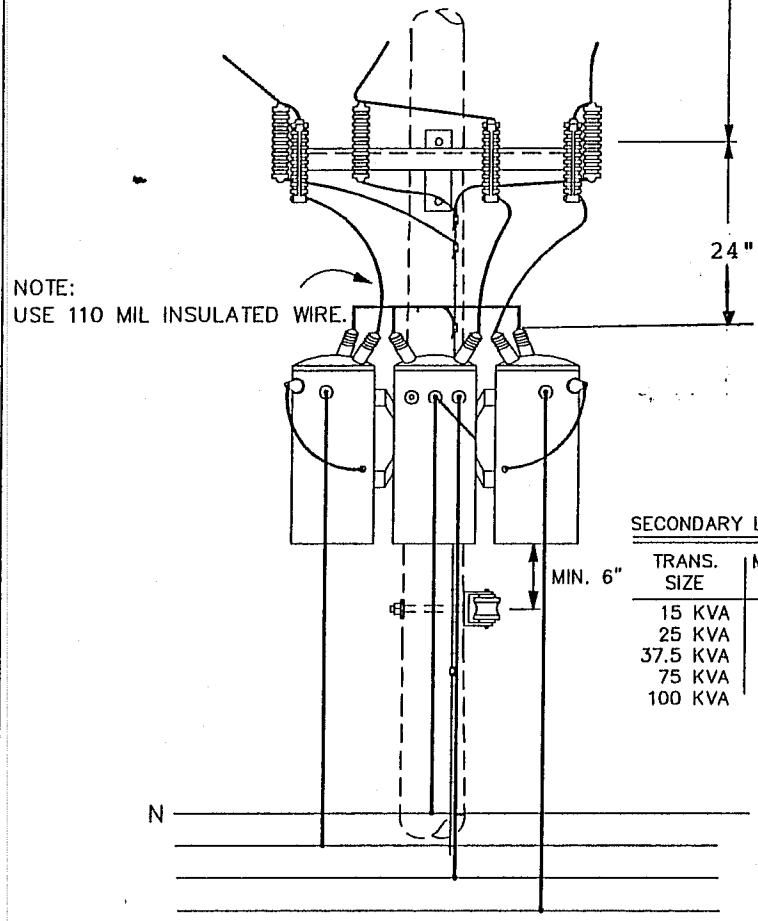
POWER ENGINEERING ASSOCIATES, INC.
MARIETTA, GA.

DATE: MARCH, 1991

REVISIONS

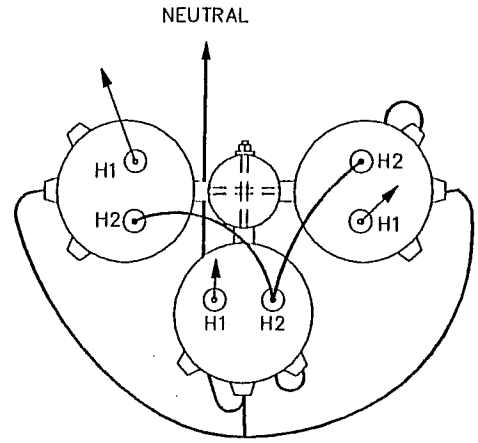
ELECTRIC CITIES OF GEORGIA

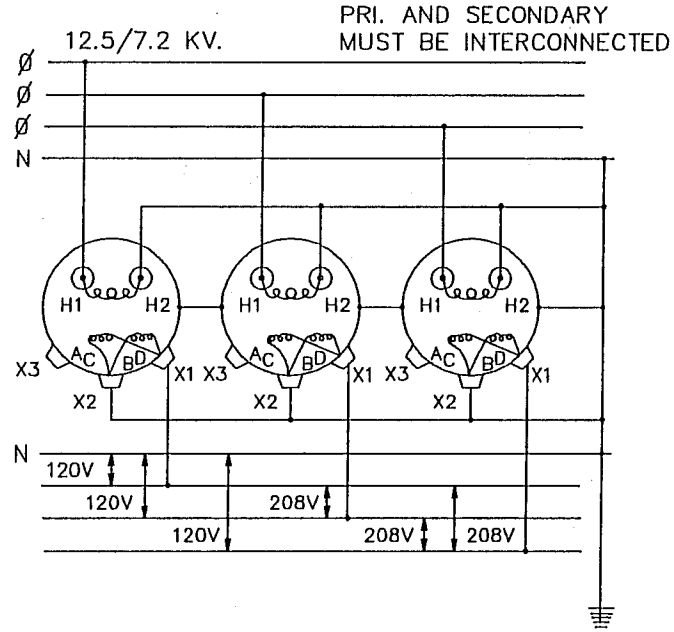
7.04



SECONDARY LEAD SIZE

TRANS. SIZE	MIN. LEAD SIZE
15 KVA	1/0 CU.
25 KVA	1/0 CU.
37.5 KVA	2/0 CU.
75 KVA	4/0 CU.
100 KVA	500 CU.

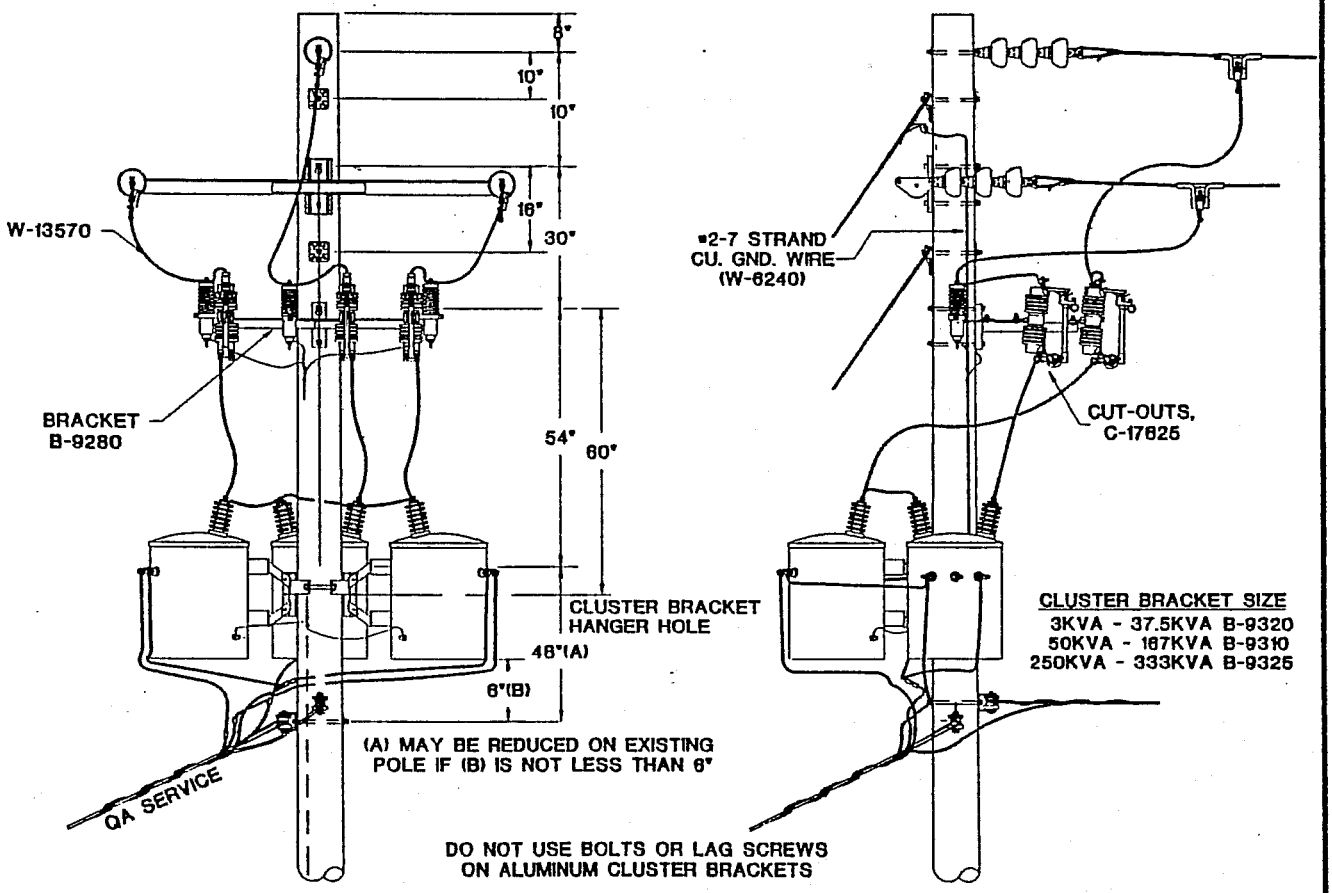




G312

THREE TRANSFORMERS CLUSTER MOUNTED
FOUR WIRE GROUNDED WYE – GROUNDED WYE

FOR TRANSFORMER CONNECTIONS REFER TO PAGES
73.70, 3.71, 3.72, 3.73, 3.74



NOTES

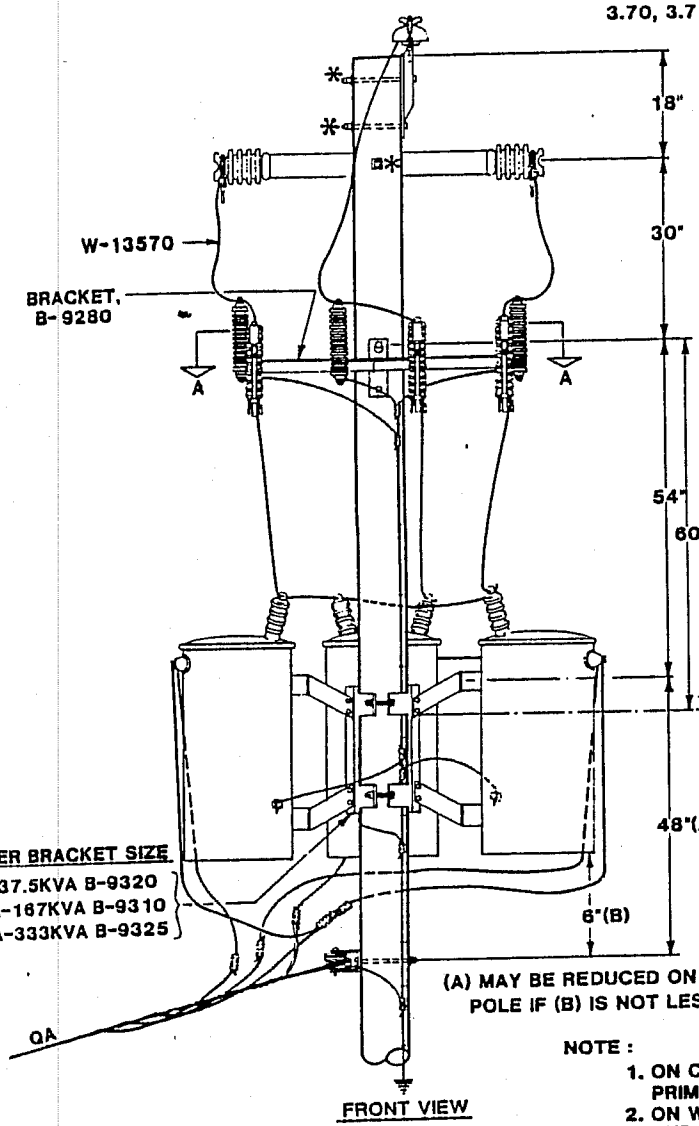
1. ON CLOSED WYE-DELTA BANKS, DO NOT CONNECT BANK PRIMARY NEUTRAL TO SYSTEM NEUTRAL OR POLE GROUND.
2. ON WYE-WYE BANKS, CONNECT BANK PRIMARY NEUTRAL AND SECONDARY NEUTRAL TO SYSTEM NEUTRAL.
3. FOR MULTIPLE SERVICES - USE COPPER TRANSFORMER LEADS.
4. FOR ONE SERVICE - CONNECT SERVICE CONDUCTOR TO TRANFORMER BUSHINGS.
5. ANCHOR GUY LEAD LENGTH SHOULD BE A MINIMUM OF 22 FEET.
6. SEE PAGE No. 1.90 FOR ANCHOR GUY AND GUY STRAIN INSULATOR INSTALLATION.

THREE TRANSFORMER INSTALLATION HORIZONTAL DEAD END POLE

• - DENOTES THE USE OF PRE-DRILLED HOLES.

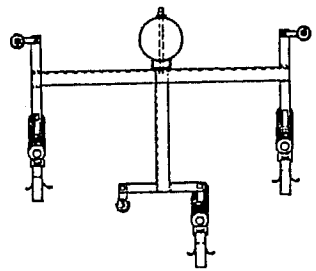
DRAWN BY A.A.W.B.	DATE 12-23-81	REVISIONS 6-4-84 12-15-86	GEORGIA POWER COMPANY
TRACED BY A.A.W.B.	SCALE NONE	09-14-90	COM00061
APPROVED CC Blakely			

FOR TRANSFORMER CONNEC S REFER TO PAGES
3.70, 3.71, 3.72, 7.[illegible], 3.74

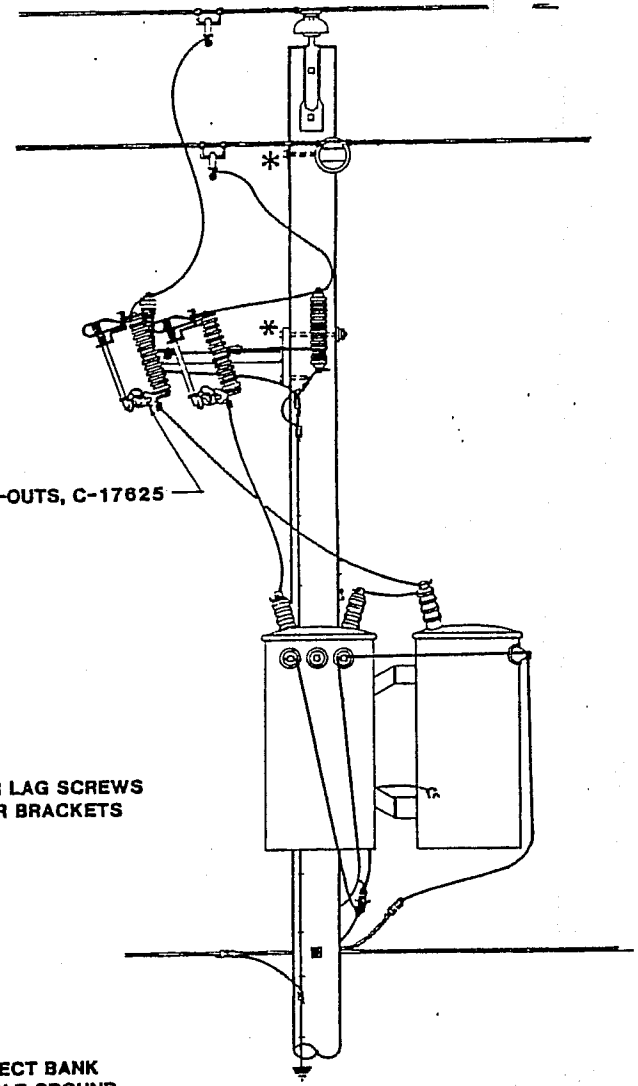


FRONT VIEW

(A) MAY BE REDUCED ON EXISTING POLE IF (B) IS NOT LESS THAN 6".



SECTION A - A



SIDE VIEW

DO NOT USE BOLTS OR LAG SCREWS ON ALUMINUM CLUSTER BRACKETS

NOTE :
1. ON CLOSED WYE-DELTA BANKS, DO NOT CONNECT BANK PRIMARY NEUTRAL TO SYSTEM NEUTRAL OR POLE GROUND.
2. ON WYE-WYE BANKS, CONNECT BANK PRIMARY NEUTRAL AND SECONDARY NEUTRAL TO SYSTEM NEUTRAL
3. FOR MULTIPLE SERVICES - USE COPPER TRANSFORMER LEADS.
4. FOR ONE SERVICE - CONNECT SERVICE CONDUCTOR TO TRANSFORMER BUSHINGS.

THREE TRANSFORMER INSTALLATION

*- DENOTES THE USE OF PRE-DRILLED HOLE.

DRAWN BY A.A.W.B. DATE 12/18/81
TRACED BY A.A.W.B. SCALE NONE
APPROVED

REVISIONS 12-15-86 8-1-88
09-14-90

GEORGIA POWER COMPANY

C-428-GO

PAGE No. 3.21

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
THREE TRANSFORMERS CLUSTER MOUNTED
FOUR WIRE GROUNDED WYE – GROUNDED WYE

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	3		BRACKETS	
	3		CUTOUTS	
	1		MOUNT, CLUSTER 3 KVA–50 KVA ALUM. – FORM	
	3		GUARD, SQUIRREL–CONVENTIONAL	
	3		TRANSFORMER, SIZE AND VOLTAGE AS REQUIRED	
	1		NUT, LOCK 5/8"	
	2		SCREW, LAG 6"	
	3		CLAMP, HOT LINE A/P ALUM, OR COPPER	
	1		WASHER, SQUARE 2 1/2" X 2 1/2"	
	1		BOLT, MACHINE 5/8" AT REQUIRED LENGTH	
	1		T–3 BRACKET	
	3		STIRRUPS, SIZE AS REQUIRED	

City of LaGrange Utilities **Memo**

To: Joe
From: Patrick
Date: Sunday, April 21, 1996

Subject: Ungrounded Wye-Delta Banks

This memo is to follow up on our discussion about "floating" the primary on a wye-delta transformer bank. After doing a little research, I believe this is a good suggestion for us to implement. The advantages are as follows:

- ✓ Eliminates the tendency of the bank to supply single phase faults (and loads) in the vicinity.
- ✓ Reduces the magnitude of single phase faults near the bank..
- ✓ No longer need to worry about transformer overload due to undetected blown fuse which creates an open-wye bank.

There are a few precautions that must be considered:

- Dual bushing transformers must be used (since we only buy these, this will not be a problem)
- Care must be used to ensure that the neutral wiring on the primary side is sufficiently isolated from ground.
- The customer will experience a single-phase condition if one of the primary supply lines is interrupted.

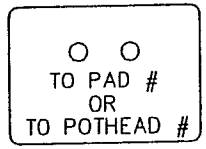
You might want to go over this change with your employees at your next meeting to be sure they understand the situation. Sounds like your idea is a good one!

P.O. Box 430
200 Ridley Avenue
LaGrange, Georgia 30241
706-883-2065
706-883-2063 Fax

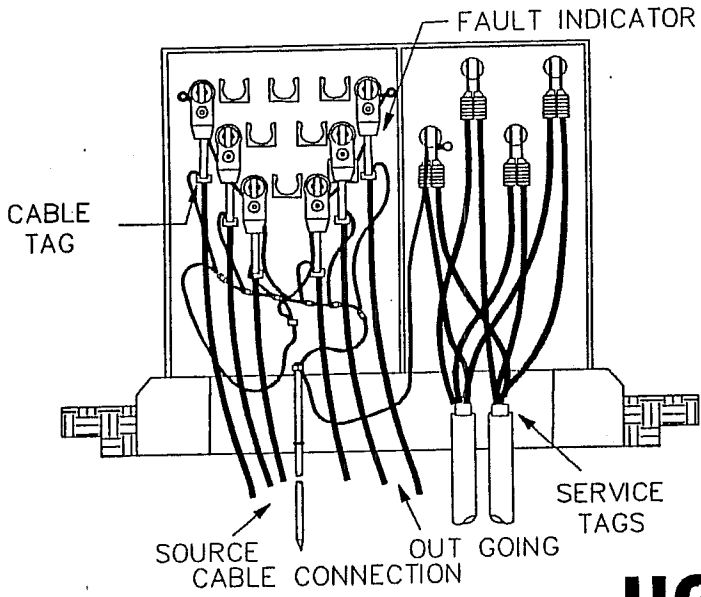
UNDERGROUND CONSTRUCTION

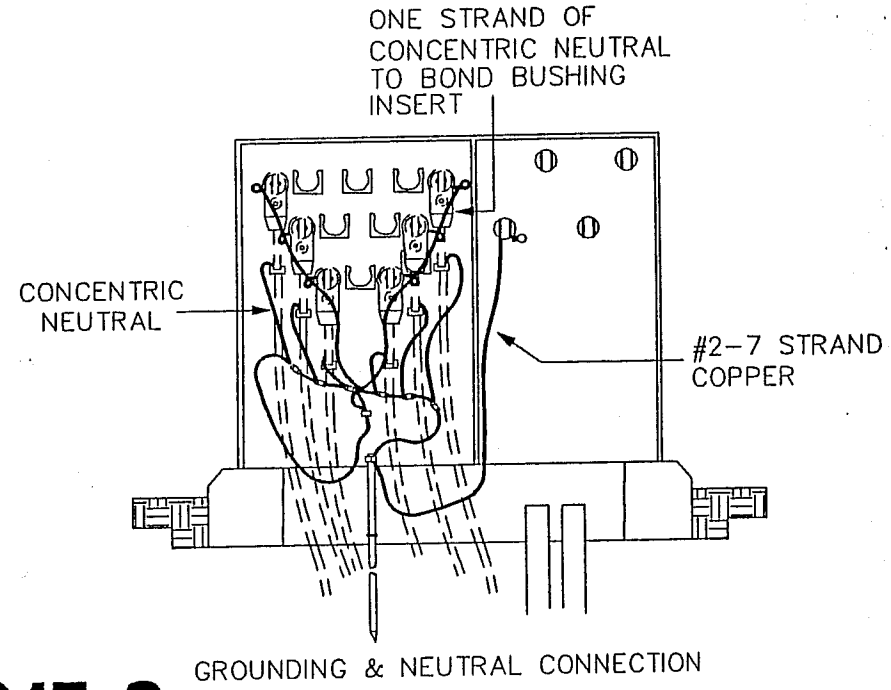
CABLE TAGS

PRIMARY TAGS



NOTES:
1. IF TRANSFORMER IS NORMAL OPEN POINT, COVERS MUST BE CONNECTED TO GROUND.
2. LEAVE CABLE CONCENTRIC NEUTRAL LONG ENOUGH TO ALLOW ELBOW SWITCHING.
3. CONNECT BUSHINGS TO TANK GROUND WITH ONE (1) STRAND OF CONCENTRIC NEUTRAL.
4. CONCENTRIC NEUTRAL AND BARE COPPER NEUTRAL TO BE LOOPED AND RAN ALONG BOTTOM EDGE OF TRANSFORMER.





UG17-2
UG18-2

THREE PHASE PAD MOUNTED TRANSFORMER LOOP FEED

POWER ENGINEERING ASSOCIATES, INC.
MARIETTA, GA.

DATE: MARCH, 1991

REVISIONS

ELECTRIC CITIES OF GEORGIA

9.01

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
THREE PHASE PAD MOUNTED TRANSFORMER
LOOP FEED
UG17-2
UG18-2

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	1		ROD, GROUND 5/8" x 10 FEET	
	AS REQ'D		WIRE, 2 SD 7 STR BARE COPPER	
	1		PAD, 3 PHASE CONCRETE TRANSFORMER	
	6		TERMINATORS, ELBOW, TRANSFORMER	
	2		LUG, TRANSFORMER GROUNDING	
	AS REQ'D		BOLT, SS HEX HEAD 1/2" x 4"	
	AS REQ'D		NUT, SS HEX 1/2"	
	AS REQ'D		WASHER, SS FLAT 1/2"	
	AS REQ'D		WASHER, SS LOCK 1/2"	
	6		BUSHING, PLUG INSERT 1/0 15 kV LB	
	1		PAD LOCK	
	1		WARNING SIGN	

POWER ENGINEERING ASSOCIATES, INC.
MARIETTA, GA.

DATE: MARCH, 1991

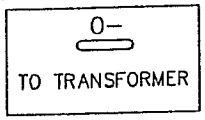
REVISIONS

ELECTRIC CITIES OF GEORGIA

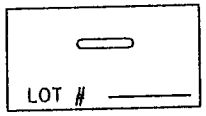
9.02

CABLE TAGS

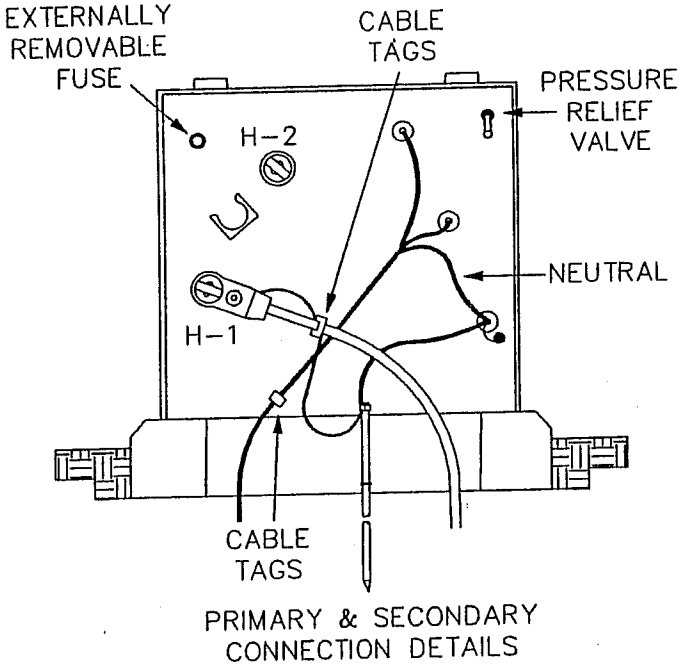
PRIMARY TAGS



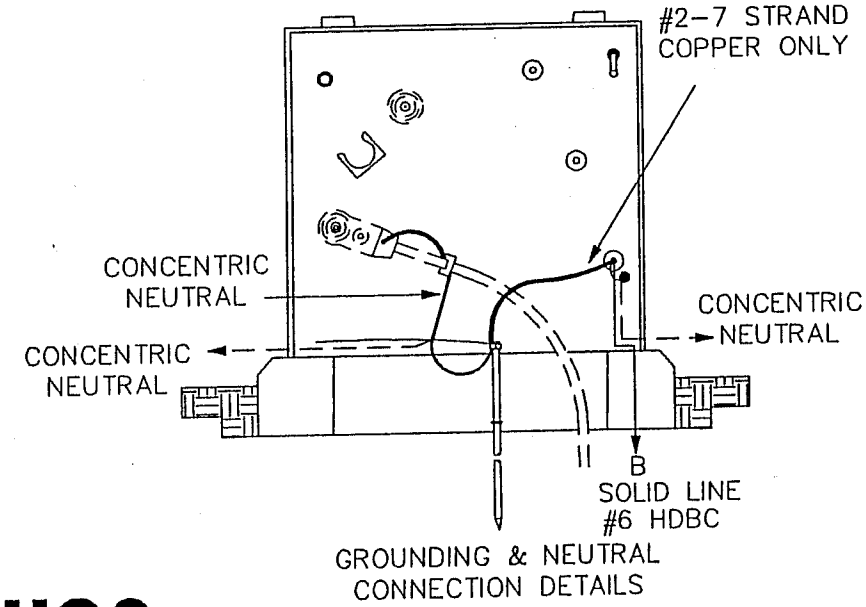
SERVICE TAGS



NOTES:
1. THE CONCENTRIC NEUTRAL HAS TO BE LOOPED UP TO FAULT IND. AND BACK DOWN CABLE.
2. H-1 IS ALWAYS THE SOURCE.



PRIMARY & SECONDARY CONNECTION DETAILS



GROUNDING & NEUTRAL CONNECTION DETAILS

UG6

SINGLE PHASE PAD MOUNTED TRANSFORMER CONNECTIONS DETAILS, LOOP FEED

CONSTRUCTION ASSEMBLY SPECIFICATIONS
FOR
ELECTRIC CITIES
SINGLE PHASE PAD MOUNTED TRANSFORMER
CONNECTION DETAILS, LOOP FEED
UG6

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	1		ROD, GROUND 5/8" x 10 FEET	
	AS REQ'D		WIRE, 6 SD BARE COPPER	
	1		PAD, 1 PHASE TRANSFORMER	
	2		BUSHING, PLUG INSERT 1/0 15 kV LB	
	1		LUG, TRANSFORMER GROUNDING	
	1		TERMINATORS, ELBOW, TRANSFORMER	
	1		RECEPTACLE, DEADEND 15 kV LB	
	1		PAD LOCK	
	1		WARNING SIGN	
	1		TRANSFORMER, PM 15 kV 120/140 AS	
			REQUIRED	
	2		BUSHING, SECONDARY, HOT LEG INS. UJ2 AS	
			REQUIRED	
	1		BUSHING, SECONDARY, NEUTRAL UJ2 AS	
			REQUIRED	
	1		CAP, PROTECTIVE 15 kV	

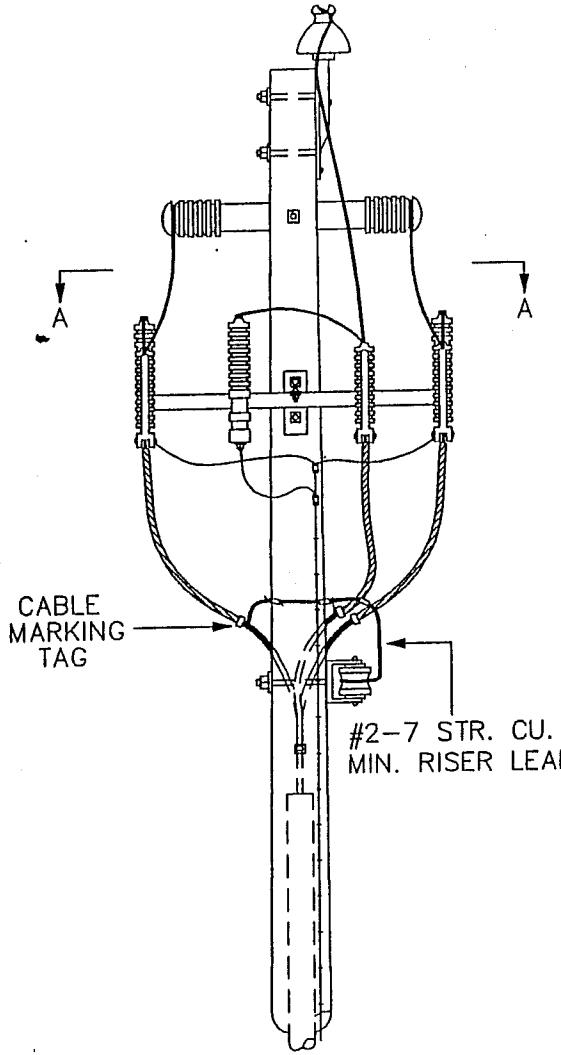
POWER ENGINEERING ASSOCIATES, INC.
MARIETTA, GA.

DATE: MARCH, 1991

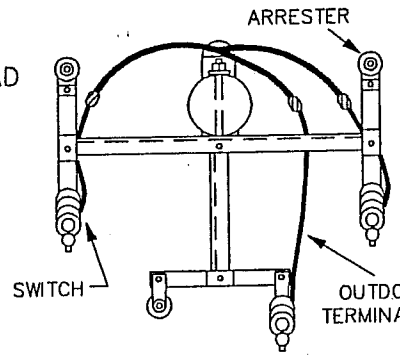
REVISIONS

ELECTRIC CITIES OF GEORGIA

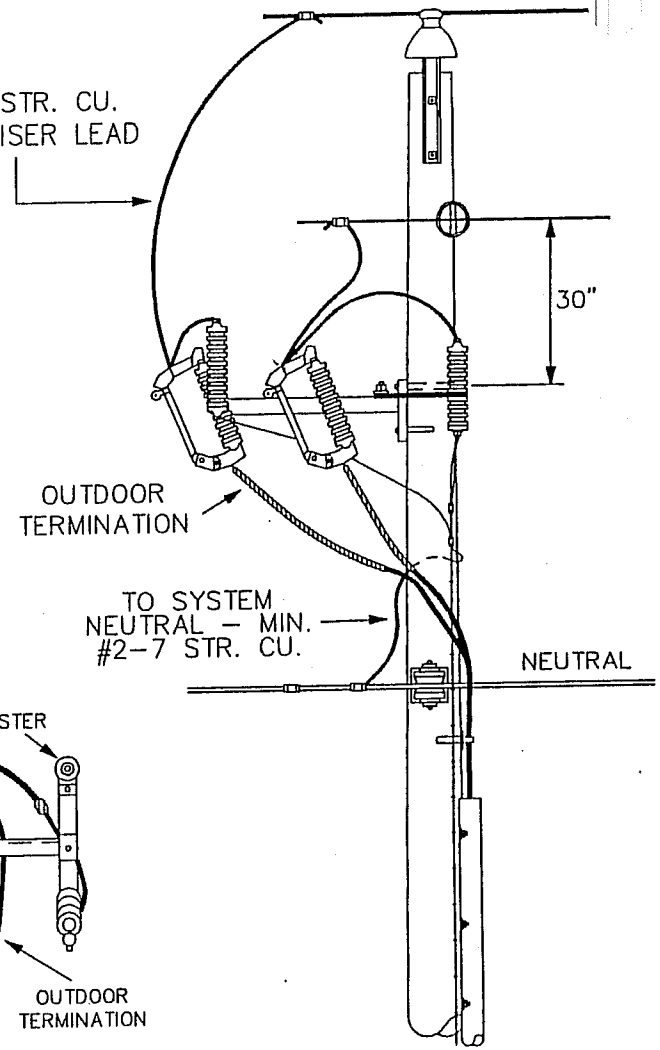
9.09



FRONT VIEW



SECTION A–A



SIDE VIEW

THREE PHASE POTHEAD POLE WITH RISER

UM2-5A

CONSTRUCTION ASSEMBLY SPECIFICATIONS

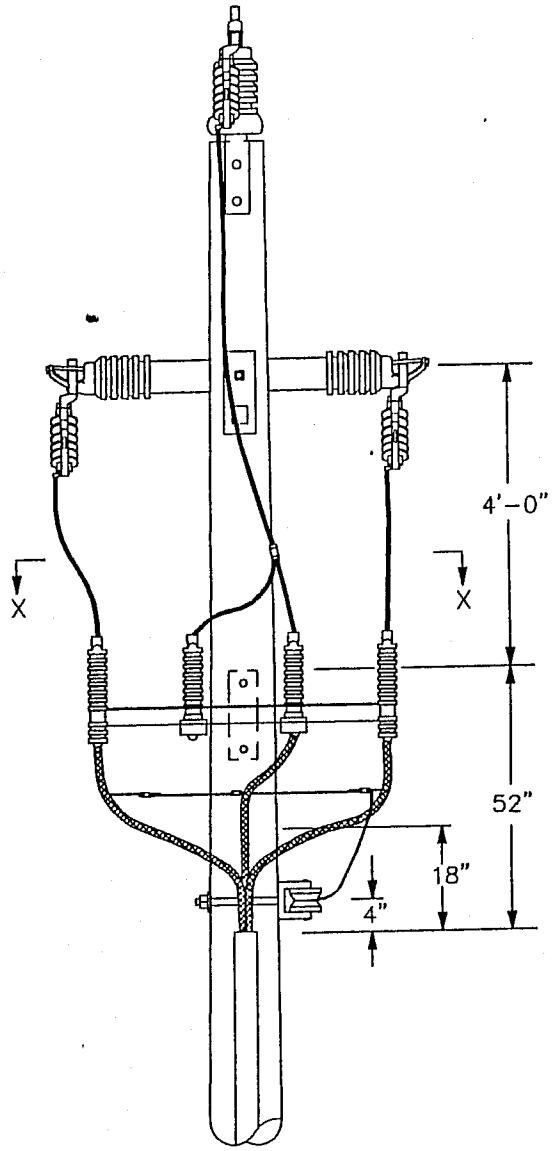
FOR

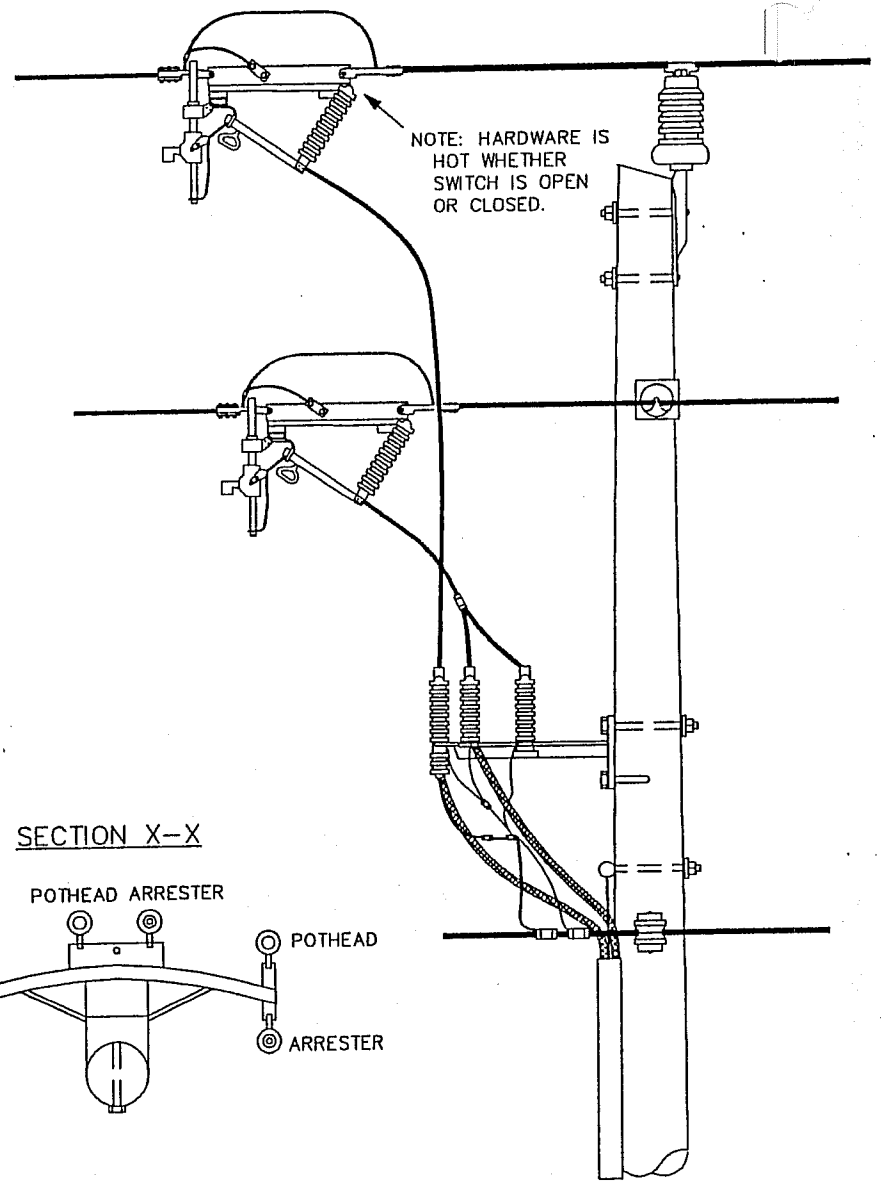
ELECTRIC CITIES

THREE PHASE POTHEAD POLE WITH RISER

UM2-5A

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	3		ARRESTER, RISER POLE II	
	1		BRACKET, 3 PHASE ARR. AND CUTOUT	
	3		CUTOUT, 100 AMP 15 kV NLB/LB HK	
	1		5/8" EYE BOLT	
	2		NUT, LOCK 5/8"	
	1		SCREW, LAG 6"	
	3		WASHER, SQUARE 2 1/2" X 2 1/2"	
	3		GRIP, CABLE RISER	
	1		GUARD, CABLE RISER VENT 4"	
	1		BOLT, MACHINE 5/8" AT REQUIRED LENGTH	
	1		POTHEADS, SIZE AS REQUIRED	
	1		CLEVIS, SHACKLE, F/CABLE RISER GRIP	





SECTION X–X

UM2-9A

THREE PHASE POTHEAD INSTALLATION FOR 1000 ~~XLP~~ EPR U.G. FEEDER

POWER ENGINEERING ASSOCIATES, INC.
MARIETTA, GA.

DATE: MARCH, 1991

REVISIONS

ELECTRIC CITIES OF GEORGIA

9.10

CONSTRUCTION ASSEMBLY SPECIFICATIONS

FOR

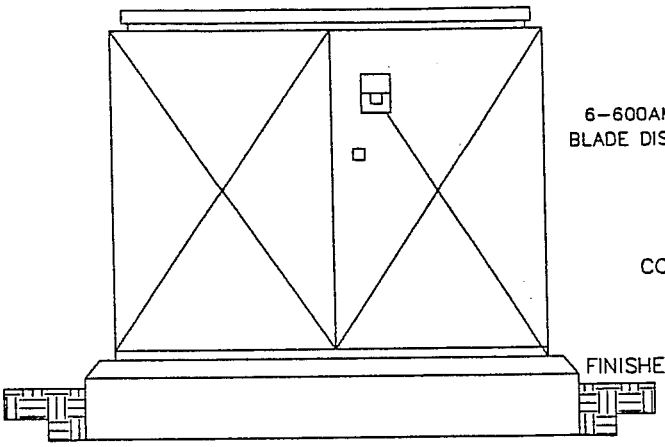
ELECTRIC CITIES

THREE PHASE POTHEAD INSTALLATION

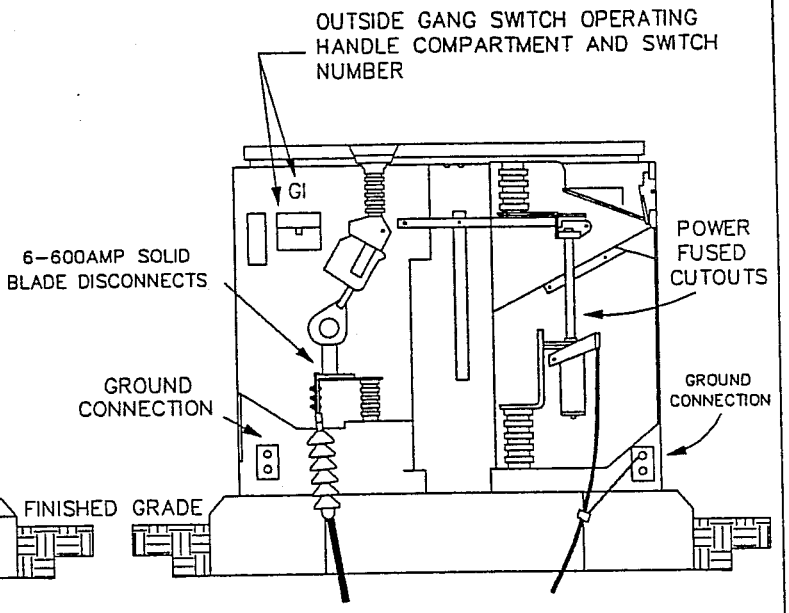
FOR 1000 XLP U.G. FEEDER

UM2-9A

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	3		ARRESTER, RISER POLE I	
	1		BRACKET, 3 PH. ARR. & CUTOUT LARGE	
	1		5/8" EYE BOLT	
	6		NUT, LOCK 5/8"	
	1		SCREW, LAG 1/2" X 4"	
	6		WASHER, SQUARE 2 1/2" X 2 1/2"	
	3		GRIP, CABLE RISER 750	
	1		GUARD, CABLE W/VENT 5" WITH BACKING PLATE	
	3		TERMINATOR, 1000 MCM 25 kV	
	3		SWITCHES IN LINE	
	6		DEADEND, CLAMP, SIZE AS REQUIRED	
	6		BOLT SQUARE ON CONNECTORS FOR SWITCHES	
	1		PIN, POLE TOP F/POST INS.	
	1		INSULATOR, CLAMP TOP POST VERTICAL	
	2		INSULATOR, CLAMP TOP POST HORIZONTAL	
	3		CLAMP, F/POST INSULATOR, SIZE AS REQUIRED	
	1		CLEVIS, SHACKLE F/KELLUM GRIP	
	3		KELLUM GRIPS, F/1000 MCM WIRE	
	5		BOLTS, MACHINE 5/8", SIZE AS REQUIRED	
	AS REQ'D		GUARD, CABLE	
	1		CLEVIS, SECONDARY	
	1		INSULATOR, SPOOL	

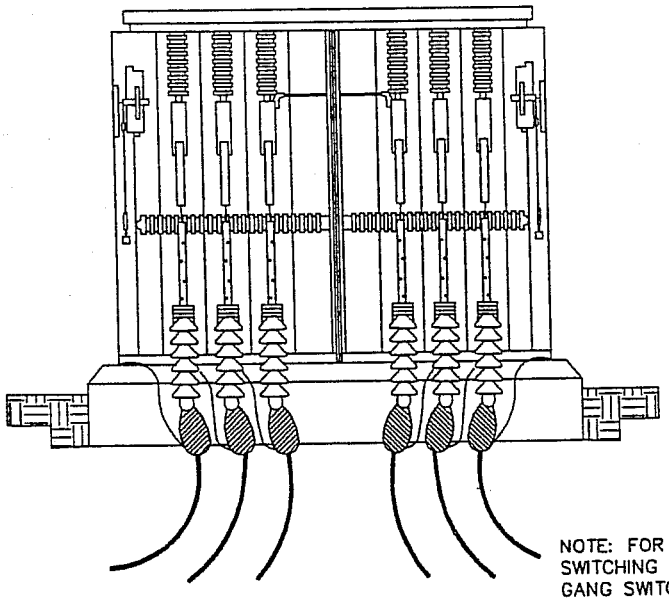


CLOSED VIEW

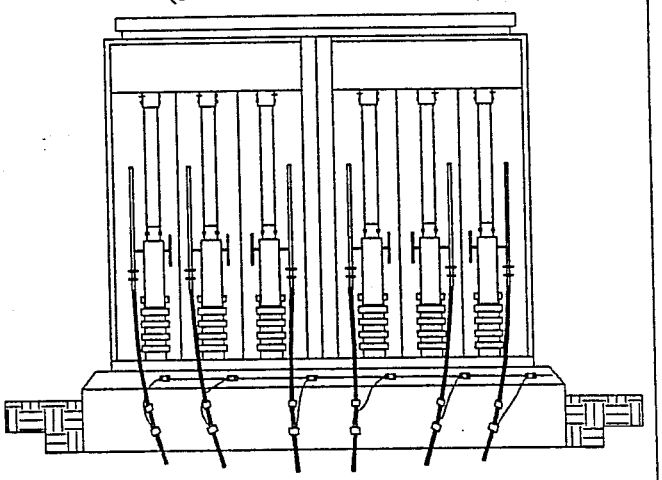


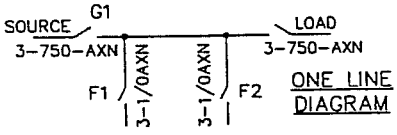
OPEN SIDE VIEW

OPEN 600 AMP VIEW
(DOORS REMOVED FOR CLARITY)



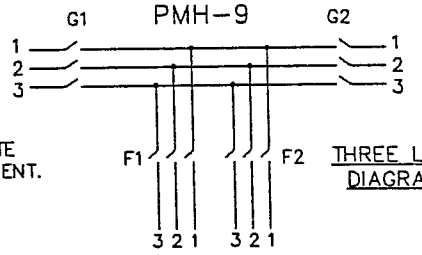
OPEN FUSED VIEW
(DOORS REMOVED FOR CLARITY)





ONE LINE DIAGRAM

NOTE: FOR GANG OPERATED SWITCHING CUBICLES EACH GANG SWITCH NUMBER SHALL BE INSTALLED IMMEDIATELY ADJACENT TO THE APPROPRIATE OPERATING HANDLE COMPARTMENT.



THREE LINE DIAGRAM

PAD MOUNTED SWITCHING CUBICLE WITH PAD FOR 15 KV.
THREE PHASE PRIMARY GANG – OPERATED 600 AMP.
DISCONNECTS WITH FUSED TAPS

UM53-3-9

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		9.12

CONSTRUCTION ASSEMBLY SPECIFICATIONS

FOR

ELECTRIC CITIES

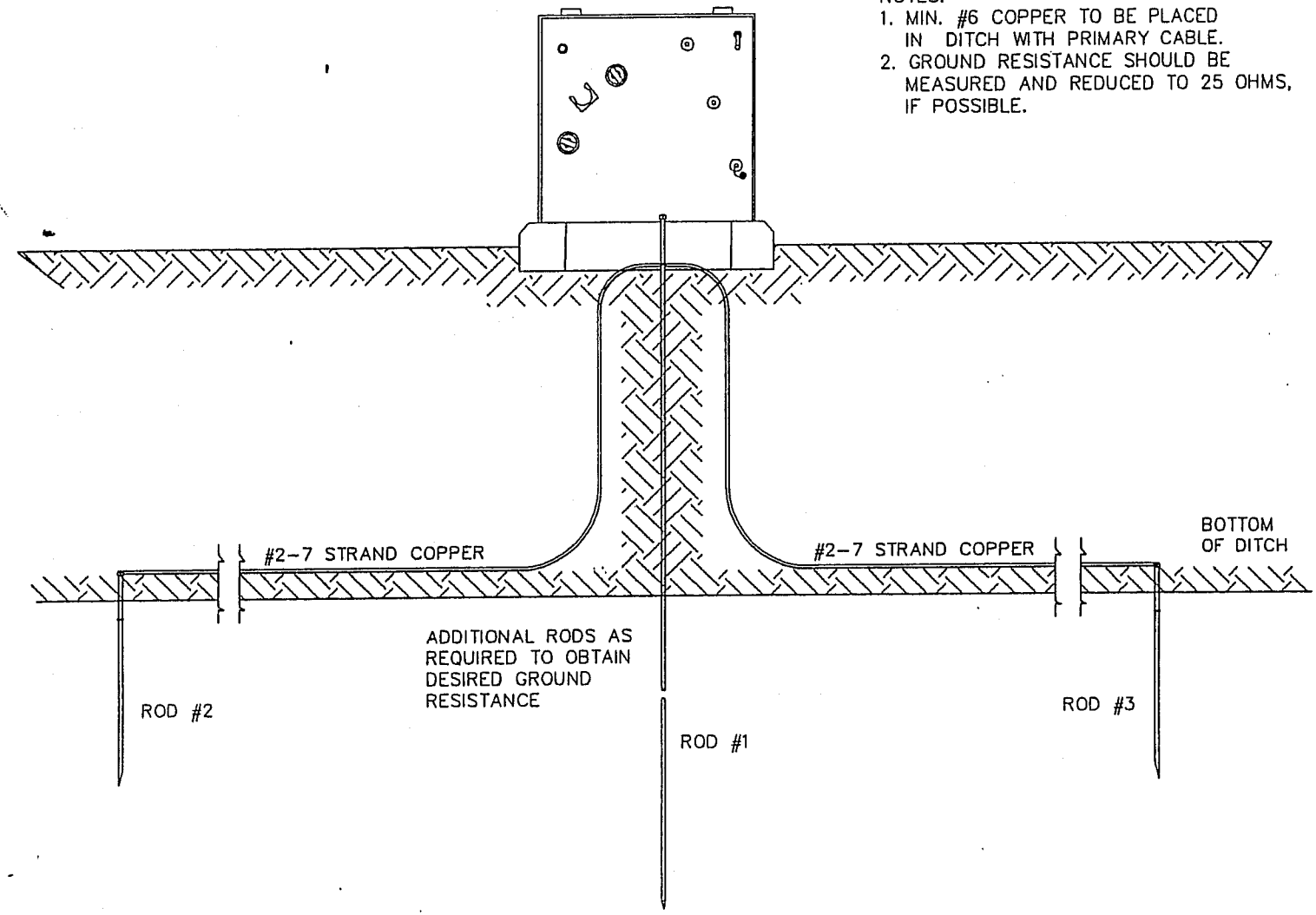
PAD MOUNTED SWITCHING CUBICLE WITH PAD FOR 15 KV.

THREE PHASE PRIMARY GANG – OPERATED 600 AMP.

UM53-3-9

ITEM	QUANTITY	STOCK NO.	MATERIAL	
	4		ROD, GROUND 5/8" X 10 FEET	
	8		WIRE, 6 SD BARE COPPER	
	20		WIRE, 4/0 SD 7 STR BARE COPPER	
	1		ENCLOSURE, PMH-9 15 kV TRANSFER	
	4		CLAMP, 5/8" GROUND ROD	
	2		CONN, SPLIT BOLT C 2/0-250/ 8-250	
	2		CONN, 2 HOLE BOLT ON 4-1/0-250 MCM	

NOTES:
1. MIN. #6 COPPER TO BE PLACED IN DITCH WITH PRIMARY CABLE.
2. GROUND RESISTANCE SHOULD BE MEASURED AND REDUCED TO 25 OHMS, IF POSSIBLE.



GROUNDING DETAILS FOR PAD MOUNTED TRANSFORMERS

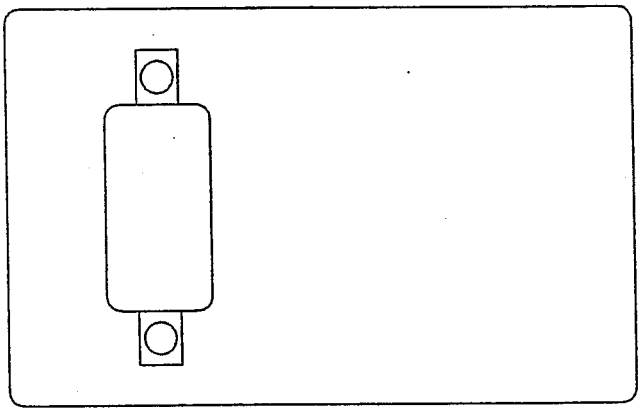
POWER ENGINEERING ASSOCIATES, INC.
MARIETTA, GA.

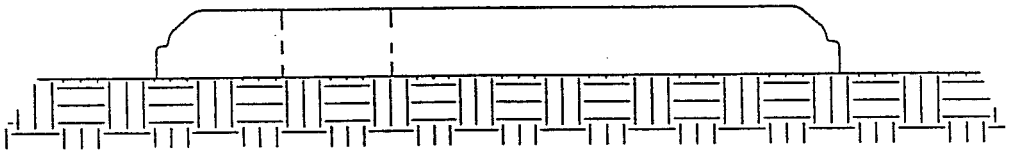
DATE: OCTOBER, 1992

REVISIONS

ELECTRIC CITIES OF GEORGIA

9.03



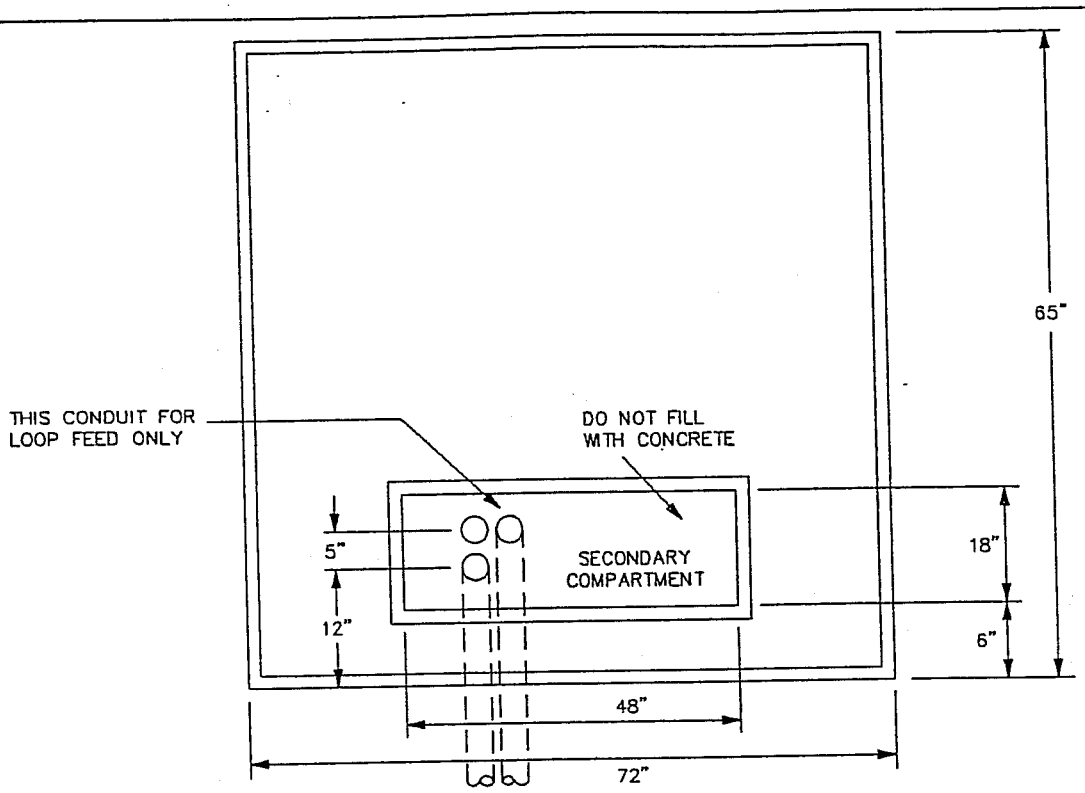


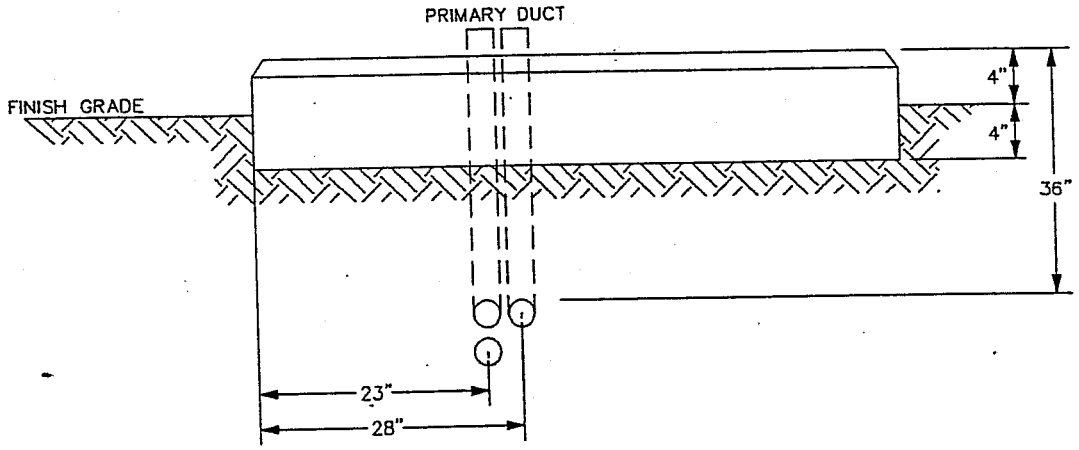
NOTE:
DESIGNATE AS UM1 – PLASTIC PAD

PLASTIC PAD ASSEMBLY

UM1

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: OCTOBER, 1992		9.04

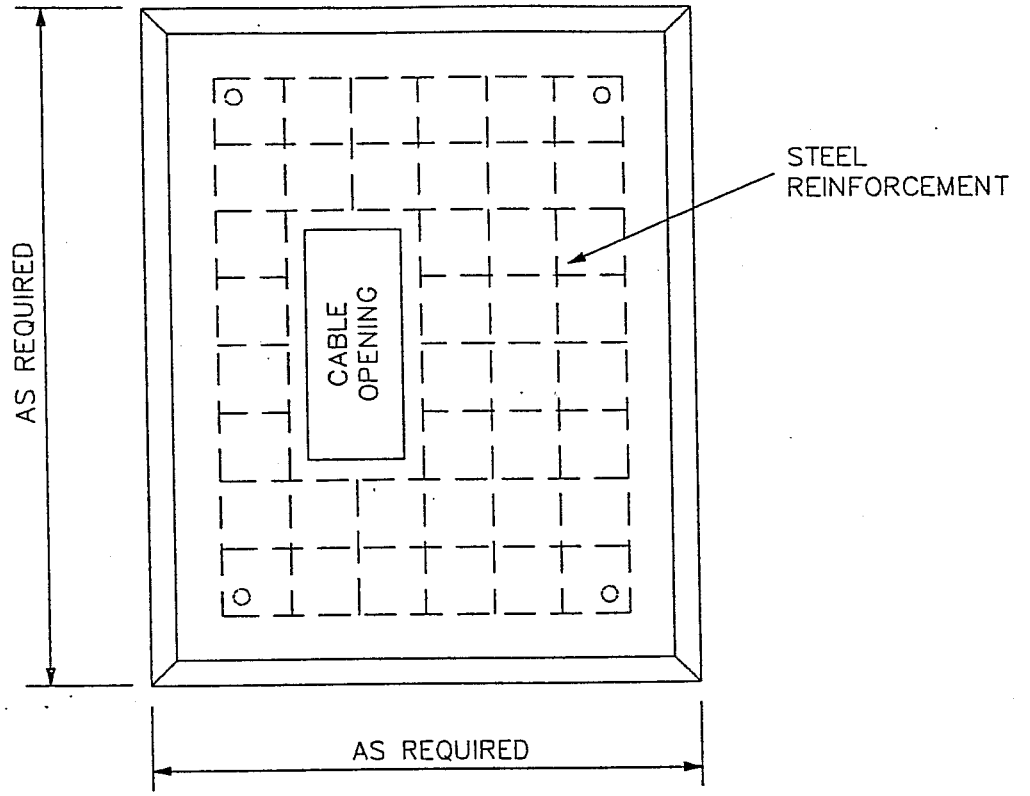


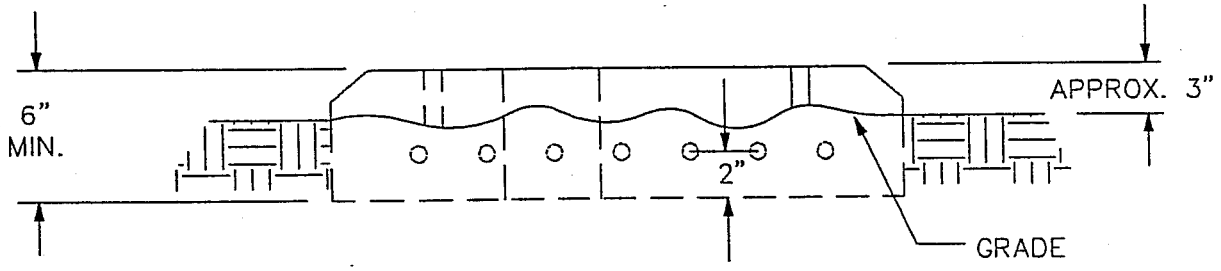


NOTES:
1. SERVICE DUCT SHALL BE LOCATED IN THE EXTREME RIGHT SIDE OF THE SECONDARY COMPARTMENT.
2. PRIMARY DUCT SHALL EXTEND BEYOND EDGE OF PAD IN DIRECTION OF INCOMING PRIMARY CABLES.
3. MATERIAL FOR PRIMARY DUCT SYSTEM WILL BE FURNISHED BY GEORGIA POWER COMPANY.
4. THE PAD SHALL HAVE A MINIMUM CLEARANCE OF 10' FROM ALL BUILDINGS. TO PROVIDE SUFFICIENT COOLING. A MINIMUM CLEARANCE OF 3' SHALL BE MAINTAINED FROM ALL OBSTRUCTIONS.
5. REINFORCE WITH #4 BARS WITH A 12"X12" GRID. 4" BELOW TOP OF PAD.
6. CONCRETE SHALL HAVE A MINIMUM ULTIMATE 28 DAY COMPRESSIVE STRENGHT OF NOT LESS THAN 3,000 POUNDS. PAD SHALL BE CURED NOT LESS THAN 72 HOURES.

STANDARD PAD FOR 150–1000 KVA RADIAL OR LOOP FEED PAD MOUNTED TRANSFORMERS

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: OCTOBER, 1992		9.06





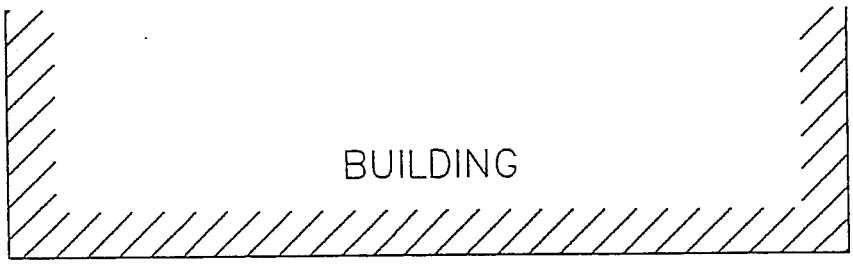
NOTES:

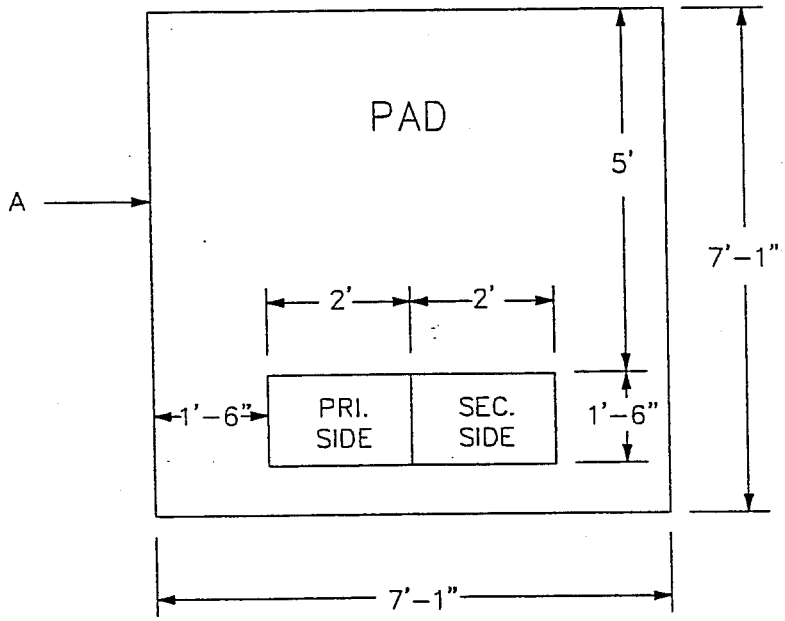
1. PAD ASSEMBLIES INCLUDE SITE PREPARATION, BEDDING AND DRAINAGE.
2. SLABS MAY BE PRECAST OR POURED IN PLACE. CONCRETE SHALL BE A 1:2:4 MIXTURE WITH A MINIMUM DESIGN STRENGTH OF 3000 P.S.I. STEEL REINFORCING SHALL BE 6" X 6" – NO. 10 WIRE MESH TO STOP 1" FROM SIDES AND CABLE OPENING.
3. EQUIPMENT SHALL BE SECURED TO PAD IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
4. LOCATION AND SIZE OF CABLE OPENING SHALL BE AS REQUIRED FOR CABLE RUN.

CONCRETE PAD ASSEMBLY

UM1-C

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: OCTOBER, 1992		9.05



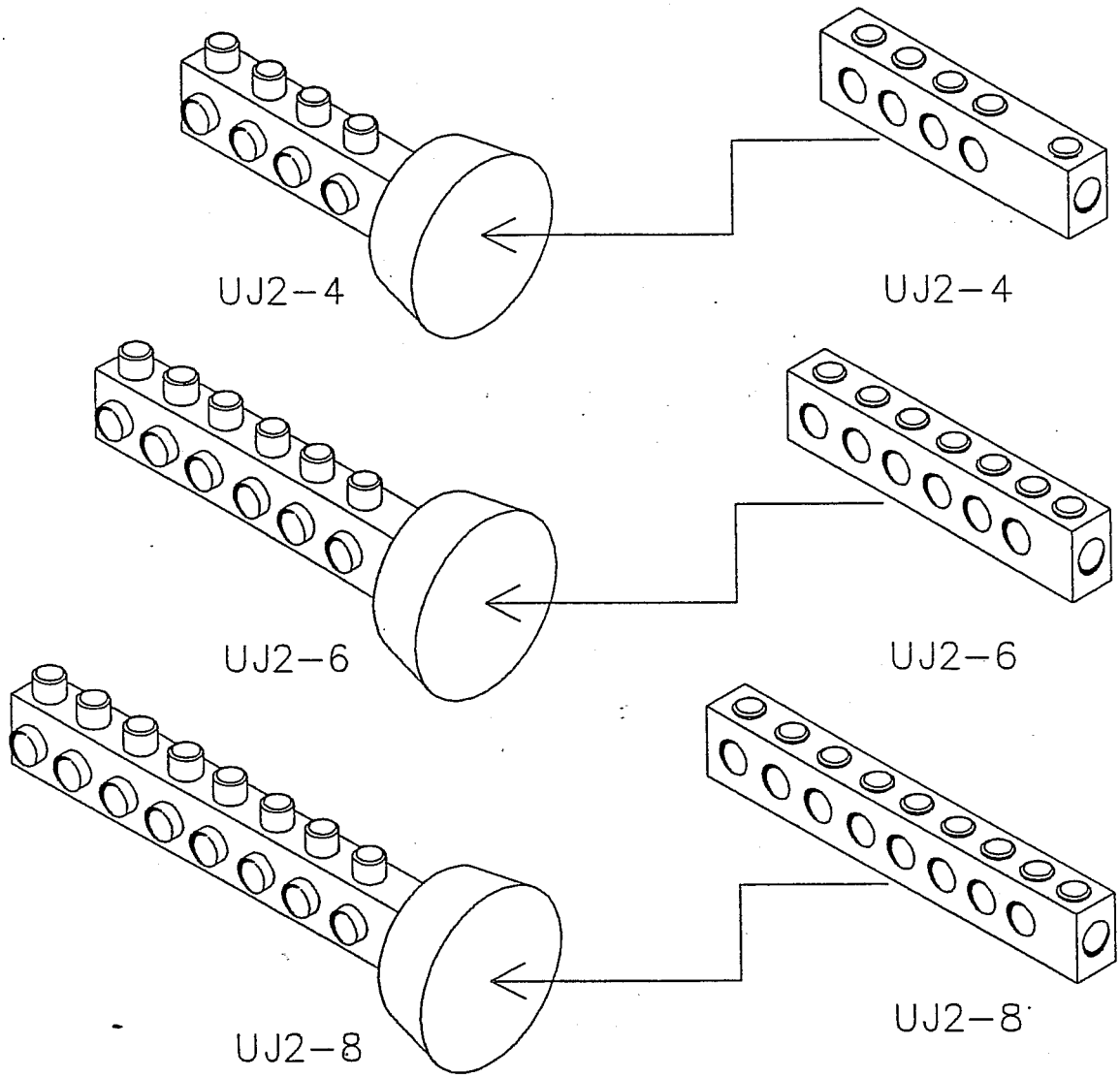


NOTE:
1. CONDUIT SHOULD BE 2" ABOVE PAD WITH PLASTIC BUSHINGS.
2. PRECAST PAD FOR 112 KVA TO 1500 KVA TRANSFORMERS.

THREE PHASE PRECAST LARGE PAD SPECIFICATION

UM1-5

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: OCTOBER, 1992		9.07



TRANSFORMER CONNECTOR BLOCKS

UJ2-4 THRU UJ2-8

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: OCTOBER, 1992		9.08

ELECTRIC SERVICE
AND
METER INSTALLATIONS

A. GENERAL NOTES

1. OVERHEAD SERVICE DROP AND METER PROVIDED AND INSTALLED BY COMPANY.
2. METER SOCKET PROVIDED (NORMALLY) BY COMPANY, AND INSTALLED BY CUSTOMER.
3. CLEARANCES MUST BE PROVIDED AS SHOWN BELOW.
4. METER SOCKET SHOULD BE "READILY ACCESSIBLE" (SEE DEFINITIONS Pg. 5.002) AND ALLOW WORKSPACE AS ILLUSTRATED BELOW.
5. REFER TO PAGES 5.120 THRU 5.123 FOR REQUIREMENTS REGARDING CUSTOMER OWNED SOCKETS.

B. MOUNTING OF METER SOCKET

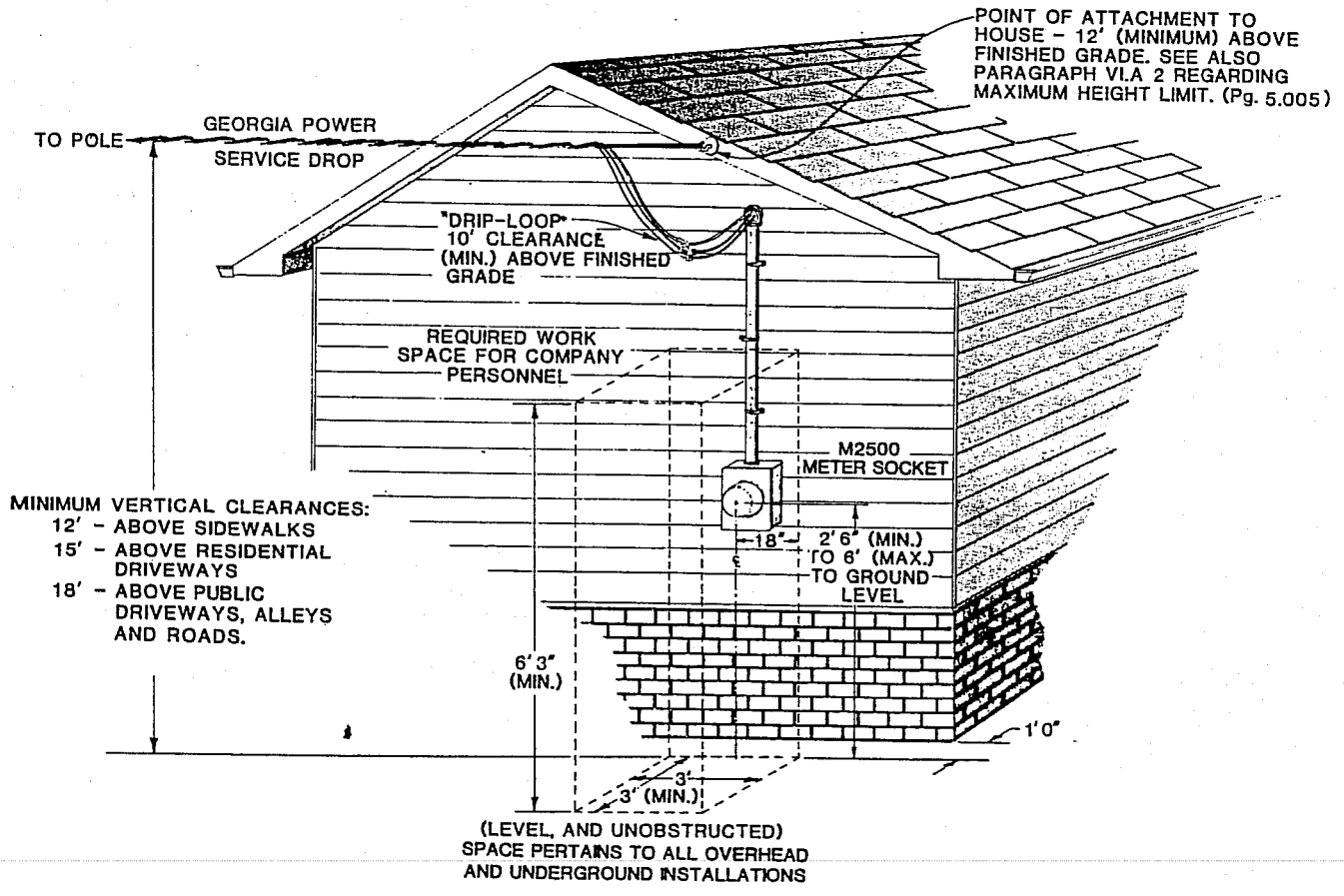
1. UNIT SHALL BE SURFACE MOUNTED , WITH CENTER OF UNIT BETWEEN 2' 6" AND 6' ABOVE FINAL GRADE, IN A LEVEL AND PLUMB POSITION.
2. UNIT SHALL BE FASTENED TO BUILDING SECURELY USING LEAD ANCHORS (FOR BRICK AND CONCRETE), TOGGLE BOLTS (FOR WOOD SIDING) OR WOOD SCREWS (FOR 2"X4" STUDS, LOG WALLS, OR OTHER SOLID LUMBER). ALL SCREWS OR BOLTS SHALL BE 1/4" DIAMETER (MIN.) STAINLESS STEEL. A MINIMUM OF FOUR FASTENERS SHALL BE USED TO MOUNT SOCKET.

C. SERVICE DROP ATTACHMENT

1. DEVICE FOR ATTACHING SERVICE DROP TO BUILDING SHALL BE FURNISHED BY COMPANY AND INSTALLED SECURELY BY CUSTOMER (SEE PAGE 5.105) AT MINIMUM VERTICAL CLEARANCE AS SHOWN BELOW.
2. IF MINIMUM VERTICAL CLEARANCE CANNOT BE MAINTAINED WITH THE INSTALLATION OF AN ATTACHMENT BOLT AS SHOWN BELOW, THE CUSTOMER SHALL INSTALL A STEEL SERVICE MAST (SEE PAGE 5.105).
3. CONNECTIONS BETWEEN SERVICE DROP AND SERVICE ENTRANCE CONDUCTORS SHALL BE MADE (BY COMPANY PERSONNEL) BELOW WEATHERHEAD, FORMING A DRIP LOOP.

D. CONNECTIONS IN METER SOCKET

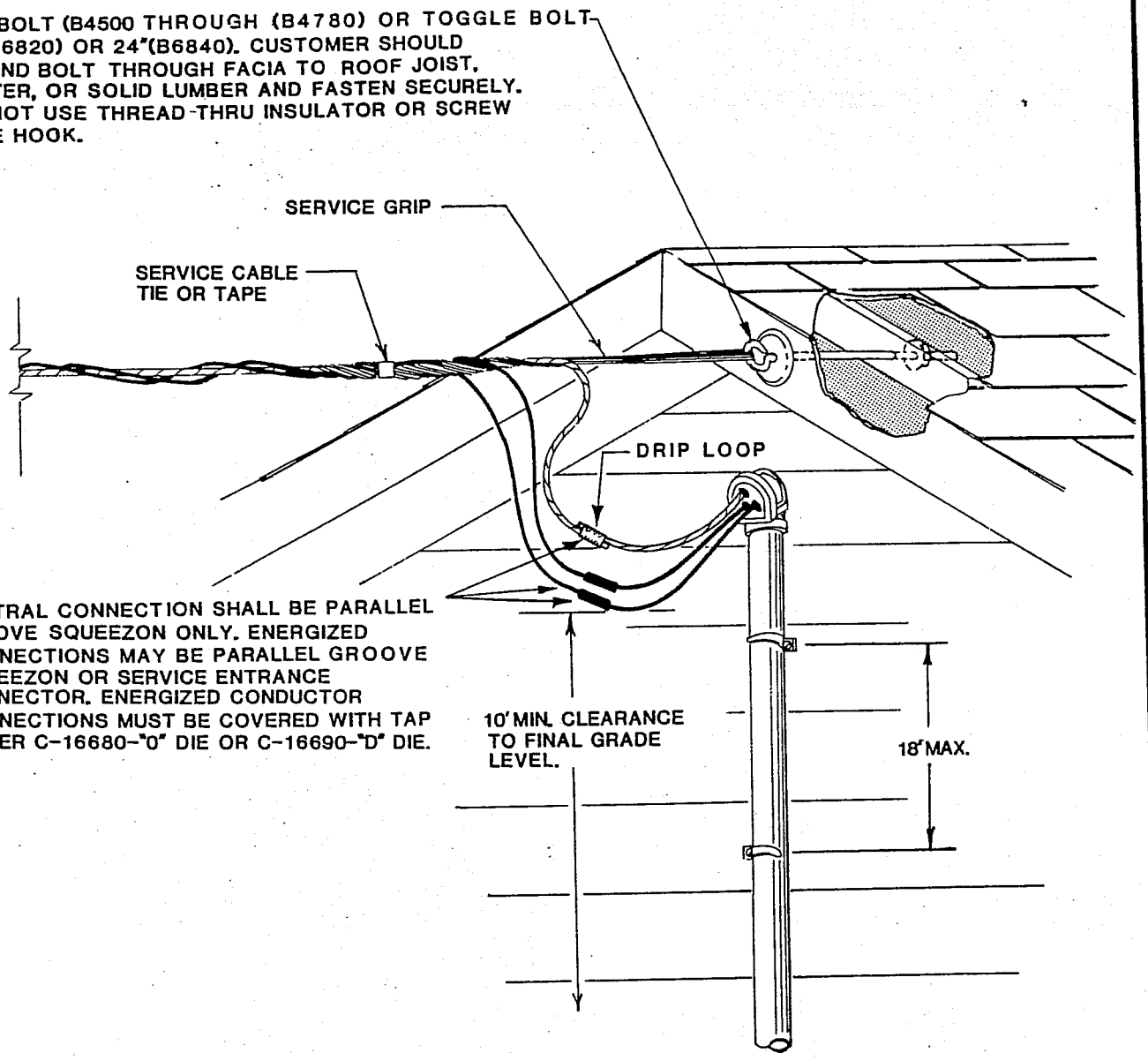
1. REFER TO PAGES 5.112 THRU 5.165 FOR METER SOCKET CONNECTION INSTRUCTIONS.



TYPICAL RESIDENTIAL OVERHEAD INSTALLATION

DRAWN BY A.A.W.B.	DATE 4/1/88	REVISIONS	GEORGIA POWER COMPANY
TRACED BY A.A.W.B.	SCALE NONE		C-545-GO
APPROVED C.C. Blakely R.C. Farmer			

EYE BOLT (B4500 THROUGH (B4780) OR TOGGLE BOLT 14"(B6820) OR 24"(B6840). CUSTOMER SHOULD EXTEND BOLT THROUGH FACIA TO ROOF JOIST, RAFTER, OR SOLID LUMBER AND FASTEN SECURELY. DO NOT USE THREAD-THRU INSULATOR OR SCREW TYPE HOOK.



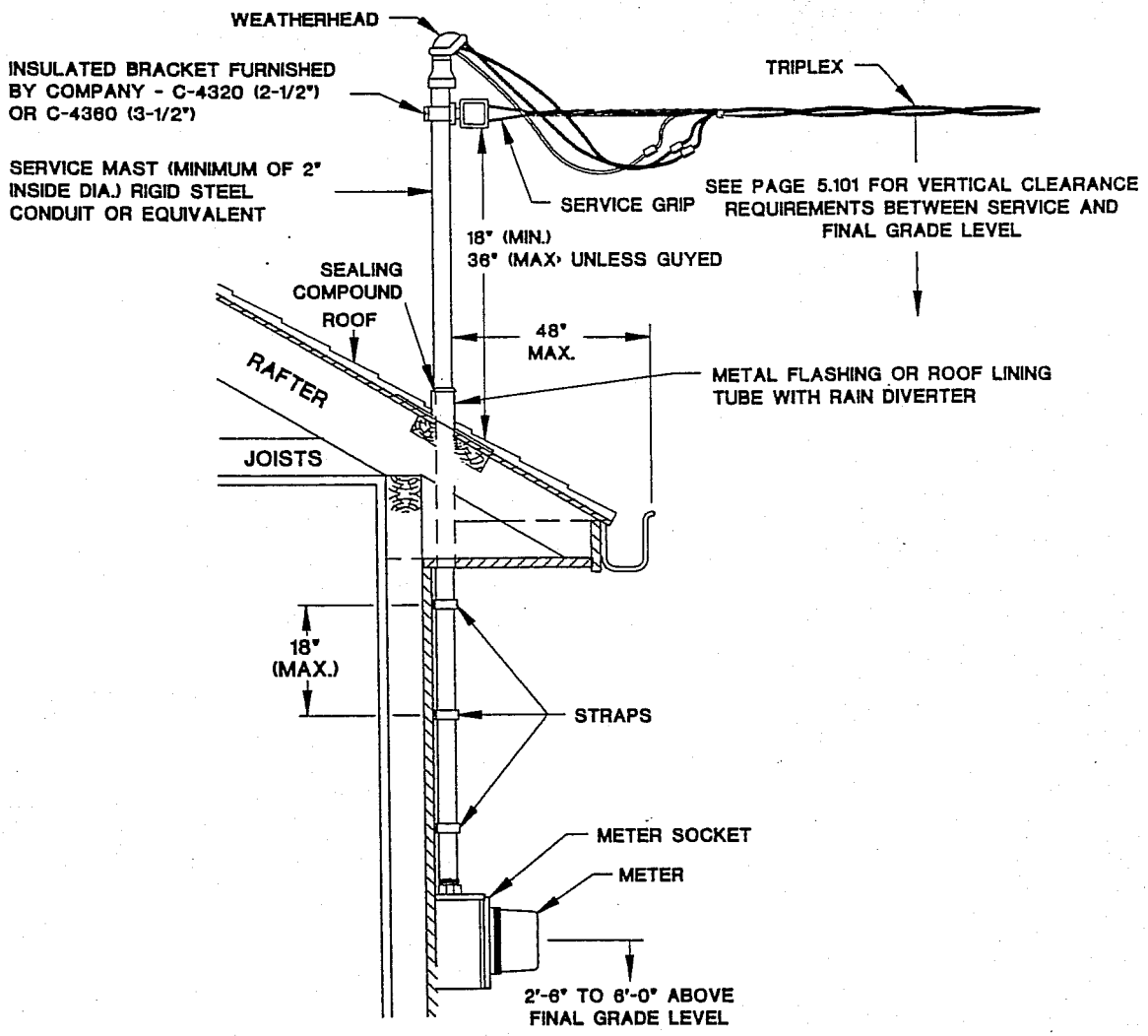
NEUTRAL CONNECTION SHALL BE PARALLEL GROOVE SQUEEZON ONLY. ENERGIZED CONNECTIONS MAY BE PARALLEL GROOVE SQUEEZON OR SERVICE ENTRANCE CONNECTOR. ENERGIZED CONDUCTOR CONNECTIONS MUST BE COVERED WITH TAP COVER C-16680-"O" DIE OR C-16690-"D" DIE.

GENERAL NOTES:

1. DEVICE FOR ATTACHING SERVICE DROP TO BUILDING FURNISHED BY COMPANY AND INSTALLED SECURELY BY CUSTOMER AS NOTED ABOVE.
2. CONNECTIONS BETWEEN SERVICE ENTRANCE CONDUCTORS AND SERVICE DROP SHALL BE MADE (BY COMPANY PERSONNEL) BELOW WEATHERHEAD, FORMING A DRIP LOOP.
3. SEE PAGE 5.101 FOR VERTICAL CLEARANCE REQUIREMENTS BETWEEN SERVICE AND FINAL GRADE LEVEL

TRIPLEX SERVICE INSTALLATION

DRAWN BY A.A.W.B. DATE 10-30-80 TRACED BY SCALE NONE APPROVED	REVISIONS 4/1/88	GEORGIA POWER COMPANY	A-478-GO



A. GENERAL NOTES

1. TYPICAL SINGLE PHASE RESIDENTIAL INSTALLATION SHOWN.
2. SINGLE PHASE COMMERCIAL AND SELF CONTAINED 30-200 AMP. COMMERCIAL CAN BE INSTALLED AS SHOWN. COMMERCIAL BUILDING ROOF DESIGNS MAY DIFFER FROM ROOF DESIGN SHOWN.
3. REFER TO PAGES 5.112 THRU 5.165 FOR TYPICAL METER INSTALLATION.

B. MAST HEIGHT AND LOCATION

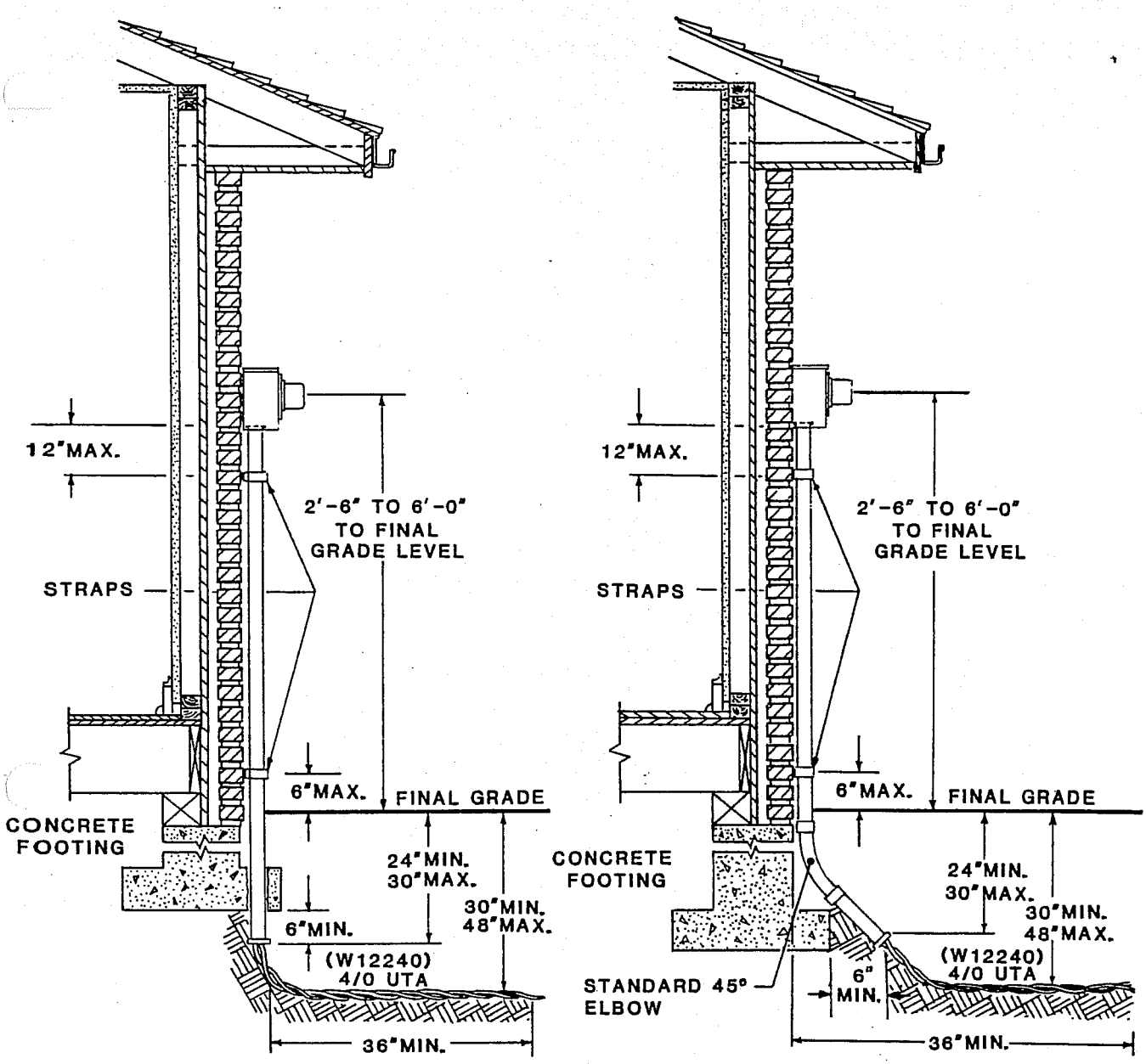
1. MASTS TALLER THAN 36 INCHES ABOVE ROOF SHALL BE GUYED.
2. THE LENGTH OF SERVICE DROP EXTENDING OVER ROOF (INCLUDING EAVES AND GUTTERS) SHALL NOT EXCEED 48 INCHES.

C. CONNECTIONS IN METER SOCKET

REFER TO PAGES 5.112 THRU 5.165 FOR REQUIREMENT AND RESTRICTIONS.

TYPICAL STEEL SERVICE MAST INSTALLATION (FURNISHED AND INSTALLED BY CUSTOMER)

DRAWN BY A.A.W.B. DATE 4/1/88 TRACED BY A.A.W.B. SCALE NONE APPROVED	REVISIONS	GEORGIA POWER COMPANY COM00015



NOTE: CROSSHATCHED AREA DENOTES UNDISTURBED OR RE-COMPACTED SOIL DIRECTLY BENEATH CABLE (EXTENDING 36" MIN. FROM BUILDING) AND CONDUIT (OR ELBOW) TO PREVENT LATER SETTLING OF CABLE AND CONDUIT. FAILURE TO PROVIDE COMPACT SOIL MAY RESULT IN DAMAGE TO CABLES, CONDUIT, AND METER SOCKET.

TYPICAL RESIDENTIAL UNDERGROUND INSTALLATION

DRAWN BY A.A.W.B. DATE 4/1/88 TRACED BY A.A.W.B. SCALE NONE APPROVED	REVISIONS	GEORGIA POWER COMPANY	A-529-GO

CURRENT TRANSFORMER INSTALLATION ON MAST BRACKET QUADRAPLEX SERVICE COMPANY-OWNED METER SOCKET (M-2392)

A. GENERAL NOTES

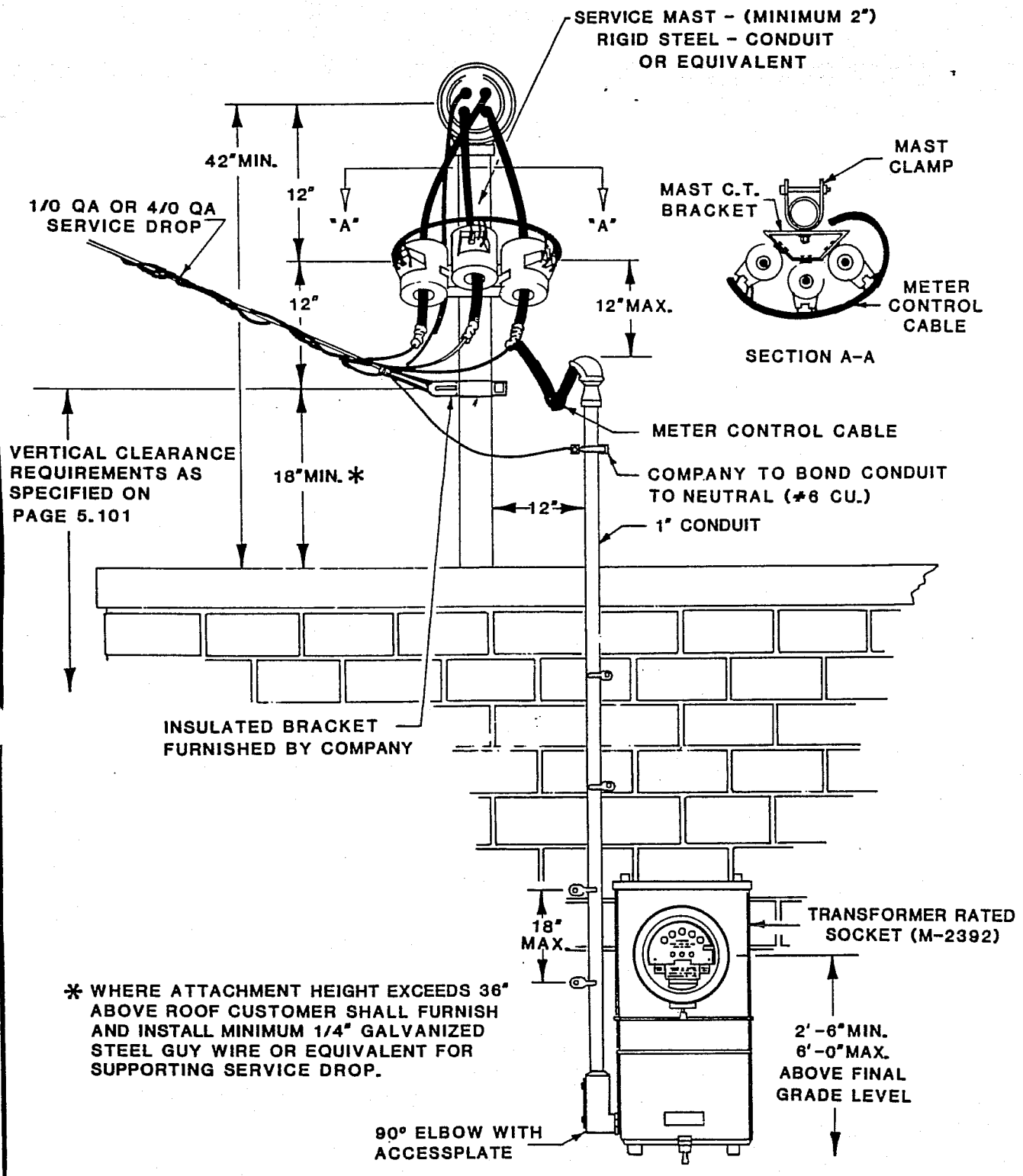
1. This arrangement might be utilized on services above 200 amperes where deemed appropriate by a qualified employee of the Company.
2. Overhead service drop and meter provided and installed by Company.
3. Current transformers provided by company and may be issued to the customer for installation or installed by company employees.
4. Meter socket provided by Company and installed by customer.
5. One inch metal or intermediate metal conduit and service mast furnished and installed by customer as illustrated on page 5.147.
6. Metering control cable provided and installed by Company.
7. The applicable requirements for this installation regarding accessibility to equipment, unobstructed working space adjacent to enclosures, and clearances are specified on pages 5.101 and 5.147.
8. The length of service drop over roof shall not exceed 48″.
9. Placement of meter socket in alley ways or areas where meter is subject to damage shall require advance approval of division meter supervisor.

B. MOUNTING

1. Socket and 1″ conduit shall be surface mounted with center of socket located as shown on page 5.147.
2. Meter socket and conduit straps shall be fastened to building using lead anchors (brick or solid masonry), toggle bolts (other masonry, siding), or wood screws (studs, solid lumber). All screws shall be 1/4″ minimum diameter stainless steel. A minimum of four (4) fasteners shall be used to mount meter socket.

C. CONNECTIONS

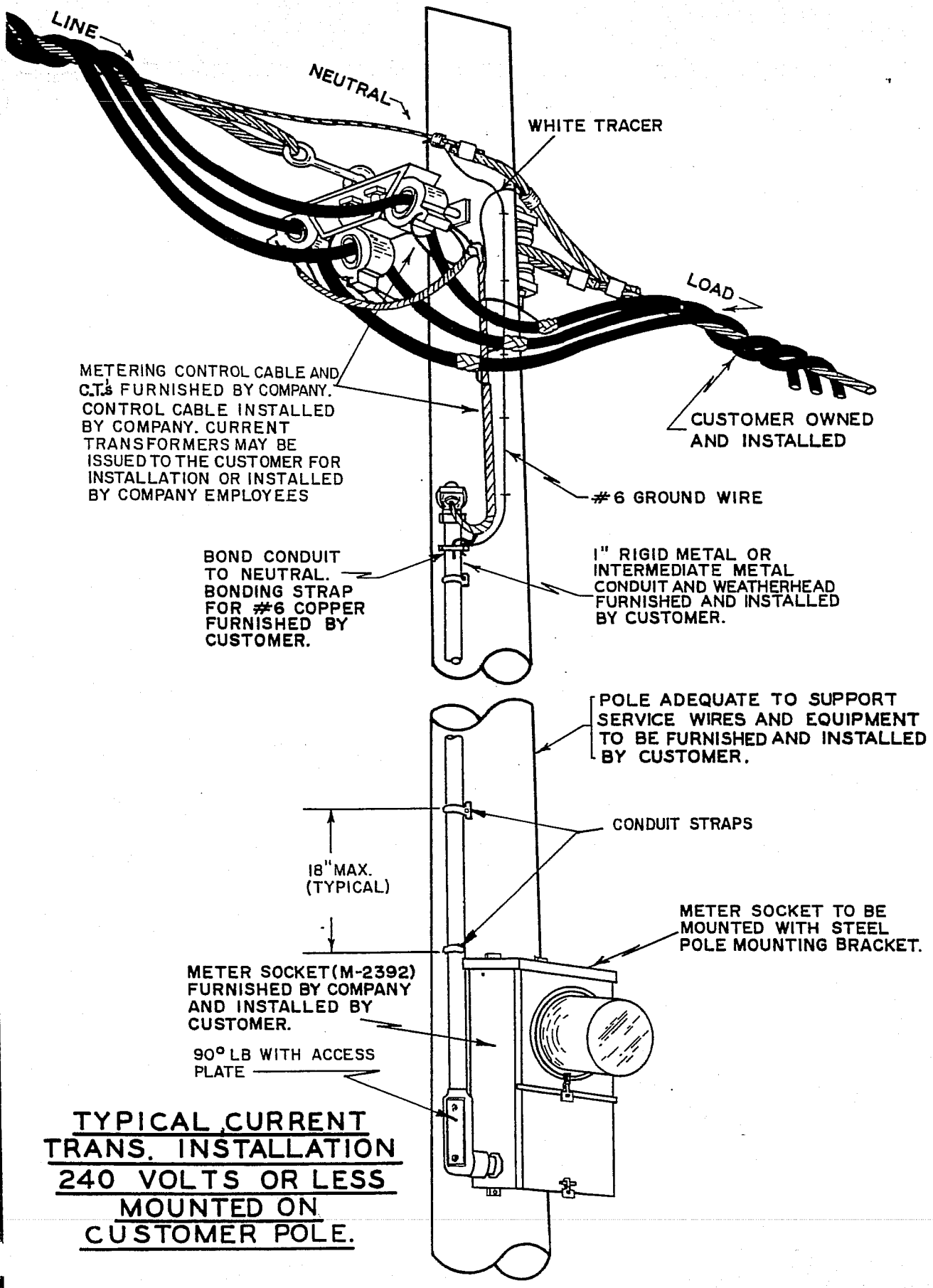
1. All connections shall be made by Company.
2. Conduit shall be bonded to meter socket with proper bonding bushing furnished and installed by customer.
3. Grounding electrode conductors shall not originate, pass through, or be attached to meter socket.



* WHERE ATTACHMENT HEIGHT EXCEEDS 36" ABOVE ROOF CUSTOMER SHALL FURNISH AND INSTALL MINIMUM 1/4" GALVANIZED STEEL GUY WIRE OR EQUIVALENT FOR SUPPORTING SERVICE DROP.

CURRENT TRANSFORMER INSTALLATION ON MAST BRACKET - QUADRAPLEX SERVICE COMPANY OWNED METER SOCKET (M2392)

DRAWN BY A.A.W.B. DATE 4/1/88 TRACED BY A.A.W.B. SCALE NONE APPROVED	REVISIONS	GEORGIA POWER COMPANY A-534-GO



TYPICAL CURRENT TRANS. INSTALLATION 240 VOLTS OR LESS MOUNTED ON CUSTOMER POLE.

DRAWN BY G.W.B. DATE 12-15-66	REVISIONS 12-19-66	GEORGIA POWER COMPANY
TRACED BY G.W.B. SCALE	11-20-67, 6-12-68, 3-5-71,	A-304-GO
APPROVED 1-4-67	12-12-75, 2-1-81, 4-1-88	

TRANSFORMER RATED UNDERGROUND METER SOCKET
3-WIRE SINGLE-PHASE 1200 AMP SERVICE
COMPANY-OWNED METER SOCKET (M-2630)

A. GENERAL NOTES

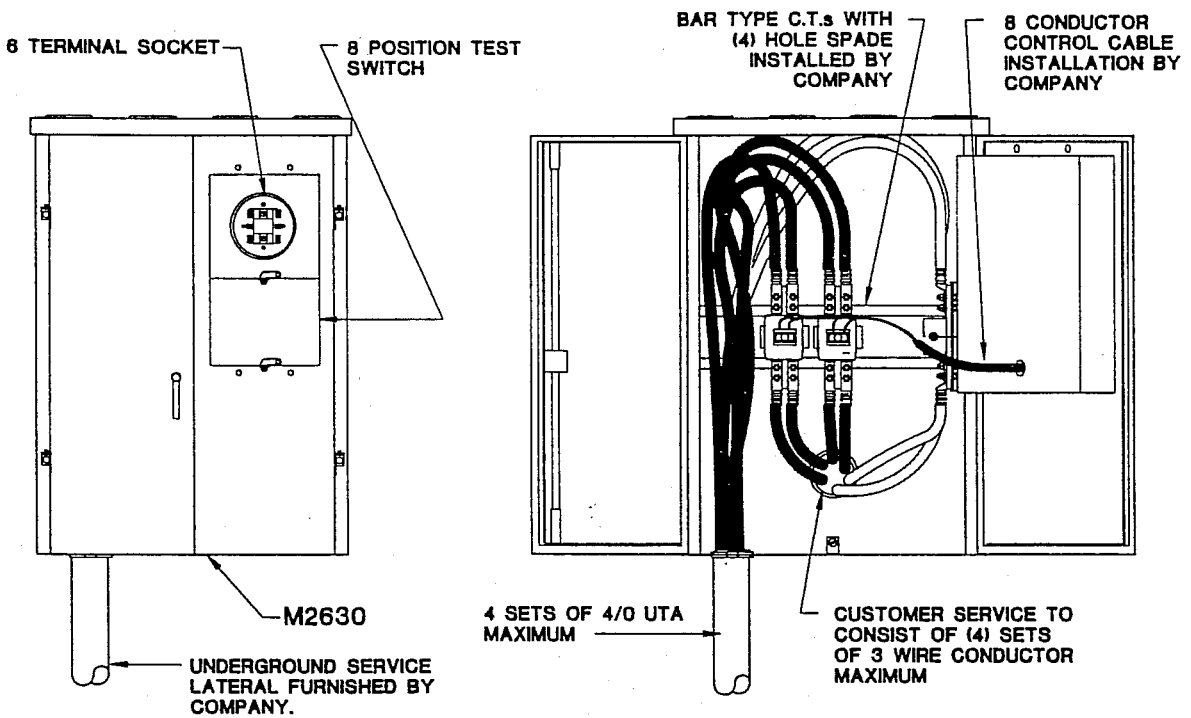
1. This arrangement is to be utilized for residential and commercial services above 200 amps up to 1200 amps only where deemed appropriate by a qualified employee of the Company.
2. Service entrance load conductors, conduit, conduit straps, lock nuts, bushings, box connectors, and miscellaneous mounting hardware are to be furnished and installed by the customer.
3. Meter socket provided (normally) by Company and installed by customer.
4. Meter, control cable, and underground service lateral provided and installed by Company. Customer to provide approximate final grade level within six inches (6″) prior to underground service lateral installation.
5. Current transformers provided by company and may be issued to the customer for installation or installed by company employees.
6. The applicable requirements regarding accessibility to equipment and unobstructed working space adjacent to enclosures are specified on page 5.101.
7. Placement of meter socket in alley ways or areas where meter is subject to damage shall require advance approval of division meter supervisor.

B. MOUNTING

1. Meter socket and conduit shall be surface mounted as specified on page 5.107.
2. Meter socket and conduit straps shall be fastened to building using lead anchors (brick or solid masonry), toggle bolts (other masonry, siding), or wood screws (studs, solid lumber). All screws, bolts shall be 3/8″ diameter (minimum) stainless steel. A minimum of four (4) fasteners shall be used to mount socket.
3. Six inch (6′) trade size rigid steel galvanized conduit or schedule 40 PVC shall be furnished and installed by customer as specified on page 5.107.
4. Conduit end shall be equipped with a proper bushing to protect cables.

C. CONNECTIONS

1. Company will wire brush and apply non-grit type inhibitor to all line and load conductors and terminate by using tubular to flat compression connectors and terminate by torquing to 200 inch pounds.
2. Grounding electrode conductors shall not originate, pass through, or be attached to meter socket.



1200 AMP MAXIMUM
SERVICE

TRANSFORMER RATED UNDERGROUND METER SOCKET FOR 3 WIRE SINGLE PHASE SERVICE 1200 AMP MAXIMUM COMPANY - OWNED SOCKET (M-2630)

DRAWN BY A.A.W.B. DATE 4/1/88 TRACED BY A.A.W.B. SCALE NONE APPROVED	REVISIONS	GEORGIA POWER COMPANY COM00024

TYPICAL UNDERGROUND COMMERCIAL THREE-PHASE INSTALLATION WITH MULTIPLE CUSTOMERS ON COMMON SERVICE LATERAL

A. GENERAL NOTES

1. Conductors, conduit, conduit straps, lock nuts, bushings, box connectors, and miscellaneous mounting hardware are to be furnished and installed by the customer.
2. Meter sockets provided (normally) by Company and installed by customer.
3. The applicable requirements regarding accessibility to equipment and unobstructed working space adjacent to enclosures are specified on page 5.101.
4. Refer to pages 5.120 through 5.123 for requirements regarding customer-owned meter sockets.
5. Placement of meter socket in alley ways or areas where meter is subject to damage shall require advance approval of division meter supervisor.

B. MOUNTING

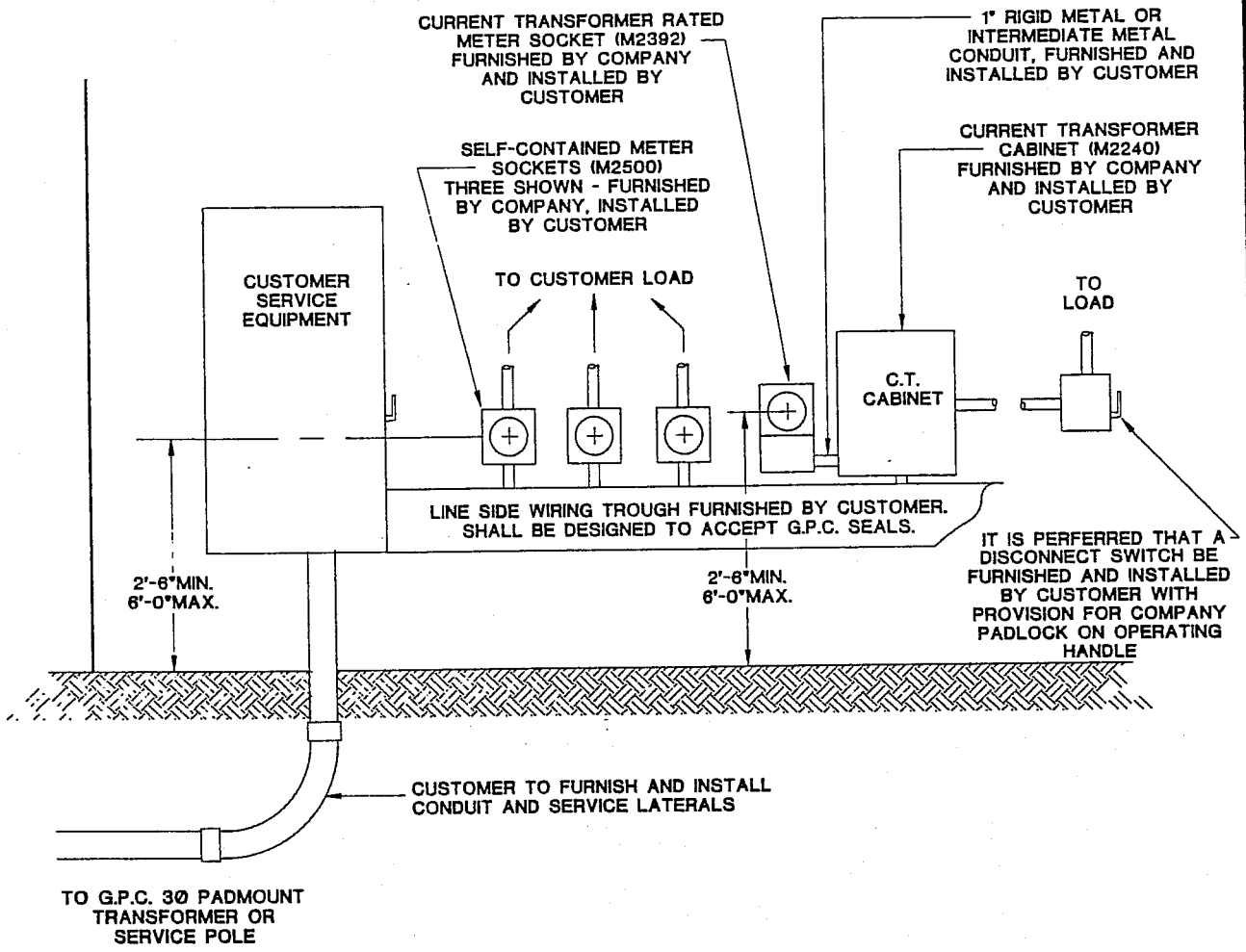
1. Meter sockets, cabinets, trough, and conduits shall be surface mounted as specified.
2. Meter socket, current transformer cabinet, and conduit straps shall be fastened to building using lead anchors (brick or solid masonry), toggle bolts (other masonry, siding), or wood screws (studs, solid lumber). All screws, bolts shall be 1/4″ diameter (minimum) stainless steel. A minimum of four (4) fasteners shall be used to mount socket and cabinet.
3. Conduit ends shall be equipped with a proper bushing to protect control cables.

C. CONNECTIONS

1. Customer shall terminate the conductors inside the customers' equipment.
2. Company will make all service lateral connections at pole or padmount transformer.
3. Grounding electrode conductors shall not originate, pass through, or be attached to meter socket.

D. MARKING

1. Each socket position and the corresponding building unit to be served (suite, apartment, street, or office number shall be accurately, clearly, and permanently labeled before meters are installed.
2. Letters/numbers shall be minimum 1″ in height, enamel paint, of contrasting color to that of the sockets.



NOTE:
1. METER SOCKET MOUNTED OUTDOORS EXCEPT WHERE SPECIAL PERMISSION OBTAINED FROM QUALIFIED EMPLOYEE OF COMPANY.
2. COMPANY TO MAKE ALL SERVICE LATERAL CONNECTIONS AT POLE OR PADMOUNT TRANSFORMER AND ALL METERING CONTROL CABLE CONNECTION'S IN METER SOCKET AND C.T. CABINET. CUSTOMER TO MAKE ALL CONNECTION'S IN WIRE TROUGH.
3. CONDUCTOR CARRYING METERED AND UNMETERED ENERGY SHALL NOT BE ALLOWED IN SAME WIRING TROUGH OR CONDUIT.

TYPICAL UNDERGROUND COMMERCIAL 3Ø INSTALLATION WITH MULTIPLE CUSTOMERS ON COMMON SERVICE LATERAL

DRAWN BY A.A.W.B. DATE 4/1/88 TRACED BY A.A.W.B. SCALE NONE APPROVED	REVISIONS	GEORGIA POWER COMPANY	COM00008

UNDERGROUND COMMERCIAL THREE-PHASE TRANSFORMER RATED METER INSTALLATION WITH ONLY ONE CUSTOMER

A. GENERAL NOTES

1. Conductors, conduit, conduit straps, lock nuts, bushings, box connectors, and miscellaneous mounting hardware are to be furnished and installed by the customer.
2. Meter socket and pedestal provided (normally) by Company and installed by customer.
3. Meter and current transformers provided and installed by Company.
4. The applicable requirements regarding accessibility to equipment and unobstructed working space adjacent to enclosures are specified on Page 5.101.
5. Placement of meter socket in alley ways or areas where meter is subject to damage shall require advance approval of division meter supervisor.

B. MOUNTING

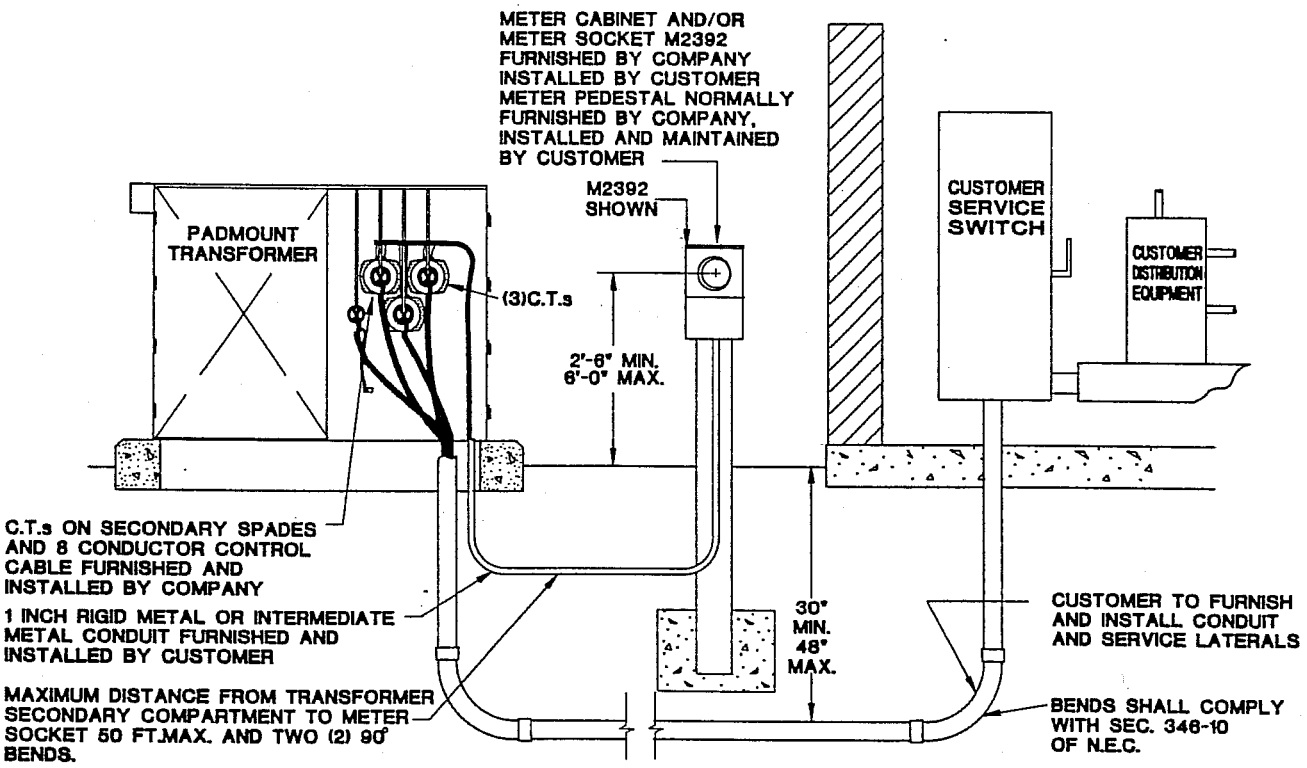
1. Meter socket and conduit straps shall be fastened to the pedestal using bolts. Bolts shall be 1/4″ diameter (minimum) stainless steel.
2. Conduit end shall be equipped with a proper bushing to protect control cables.

C. CONNECTIONS

1. Customer shall terminate the conductors inside the customer's equipment.
2. Company will make all service lateral connections at padmount transformer.
3. Grounding electrode conductors shall not originate, pass through, or be attached to meter socket.

NOTES

1. THIS METHOD OF SERVICE MUST BE APPROVED BY A QUALIFIED COMPANY EMPLOYEE
2. METER SOCKET MOUNTED OUTDOORS ON A PEDESTAL OR OUTSIDE WALL OF BUILDING.
3. COMPANY TO MAKE ALL SERVICE LATERAL CONNECTIONS AT PADMOUNT TRANSFORMER AND CONNECTION INSIDE METER SOCKET AND SECONDARY COMPARTMENT OF TRANSFORMER.
4. C.T.s TO BE INSTALLED IN SECONDARY COMPARTMENT OF THE PADMOUNT TRANSFORMER BY A QUALIFIED EMPLOYEE.
5. THIS METHOD OF SERVICE IS TYPICAL WHEN ONLY ONE 3Ø CUSTOMER IS SERVED FROM A PADMOUNT TRANSFORMER.
6. METER AND/OR METER CABINET SHALL NOT BE MOUNTED ONTO THE PADMOUNT TRANSFORMER.
7. IF PROBABILITY EXISTS FOR MORE THAN ONE CUSTOMER TO BE SERVED FROM THE PADMOUNT TRANSFORMER USE METHOD OF SERVICE SHOWN ON PAGES 5.157 AND 5.159.



UNDERGROUND COMMERCIAL 3Ø TRANSFORMER RATED METER INSTALLATION WITH ONLY ONE CUSTOMER

DRAWN BY A.A.W.B.	DATE 4/1/88	REVISIONS	GEORGIA POWER COMPANY
TRACED BY A.A.W.B.	SCALE NONE		COM00023
APPROVED			

UNDERGROUND INDUSTRIAL THREE-PHASE TRANSFORMER RATED METER INSTALLATION WITH ONLY ONE CUSTOMER 480 V TRANSFORMER 500 KVA AND ABOVE

A. GENERAL NOTES

1. Conductors, conduit, conduit straps, lock nuts, bushings, box connectors, and miscellaneous mounting hardware are to be furnished and installed by the customer.
2. Meter socket and pedestal provided (normally) by Company and installed by customer.
3. Meter, current transformers, and voltage transformers provided and installed by Company.
4. The applicable requirements regarding accessibility to meter equipment and unobstructed working space adjacent to meter enclosures are specified on Page 5.101.
5. Placement of meter socket in alley ways or areas where meter is subject to damage shall require advance approval of division meter supervisor.

B. MOUNTING

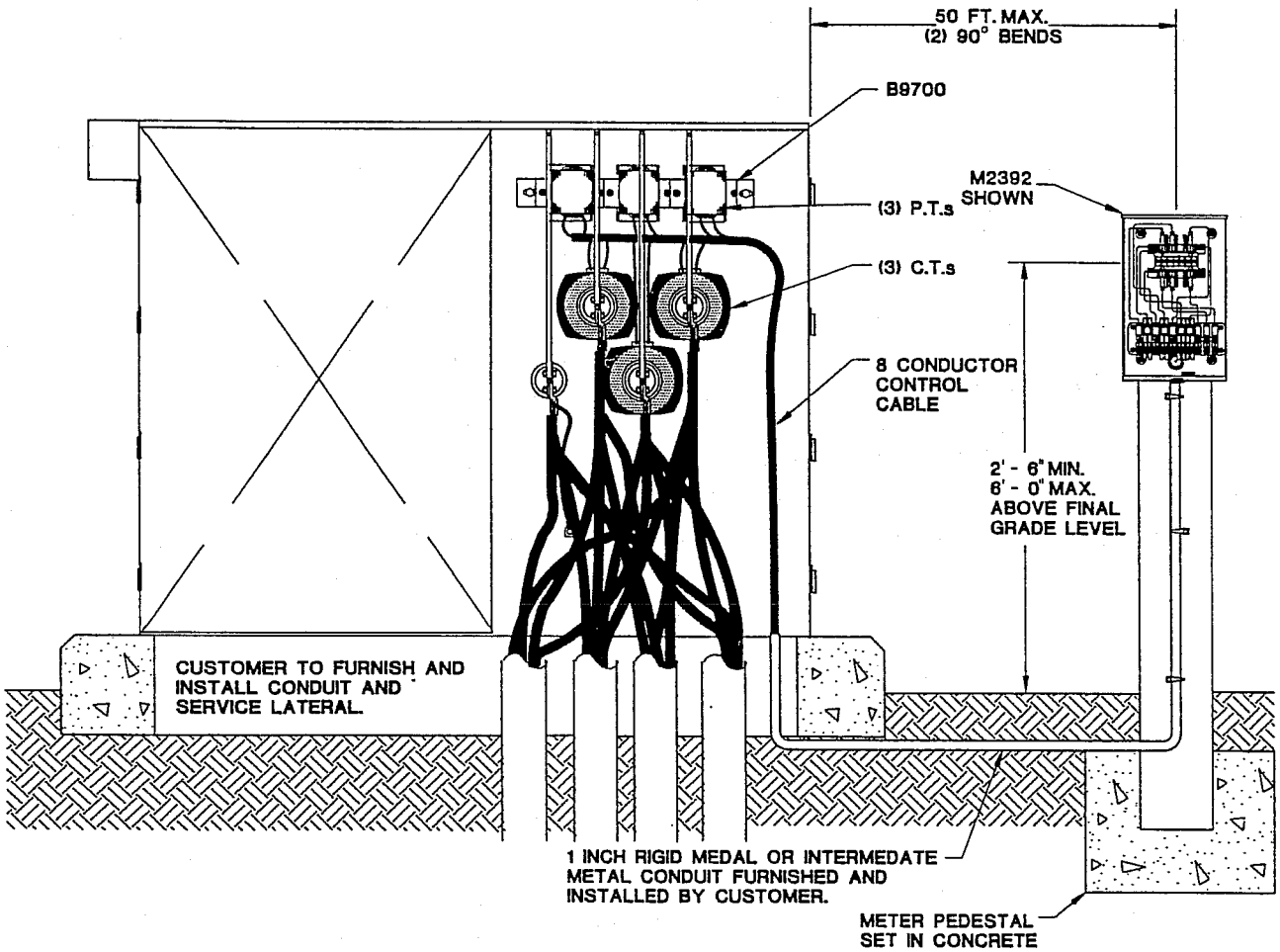
1. Meter socket and conduit straps shall be fastened to the pedestal using bolts. Bolts shall be 1/4″ diameter (minimum) stainless steel.
2. Conduit end shall be equipped with a proper bushing to protect cables.

C. CONNECTIONS

1. Customer shall terminate the conductors inside the customer's equipment.
2. Company will make all service lateral connections at padmount transformer.
3. Grounding electrode conductors shall not originate, pass through, or be attached to meter socket.

NOTE

1. POTENTIAL TRANSFORMER BRACKET AND MOUNTING PADS SHALL BE INCLUDED ON ALL 480V TRANSFORMERS 500 kVA AND ABOVE.
2. METER SOCKET MOUNTED ON A PEDESTAL OR OUTSIDE WALL OF BUILDING.
3. COMPANY TO MAKE ALL SERVICE LATERAL CONNECTIONS AT PADMOUNT TRANSFORMER AND CONTROL CABLE CONNECTIONS INSIDE METER SOCKET AND SECONDARY COMPARTMENT OF TRANSFORMER.
4. P.T.s AND C.T.s TO BE INSTALLED IN SECONDARY COMPARTMENT OF THE PADMOUNT TRANSFORMER BY A QUALIFIED EMPLOYEE.
5. THIS METHOD OF SERVICE IS TYPICAL WHEN ONLY ONE 3Ø CUSTOMER IS SERVED FROM A PADMOUNT TRANSFORMER.
6. METER AND/OR METER CABINET SHALL NOT BE MOUNTED ONTO THE PADMOUNT TRANSFORMER.
7. METER PEDESTAL NORMALLY FURNISHED BY COMPANY, INSTALLED AND MAINTAINED BY CUSTOMER.
8. METER CABINET AND/OR METER SOCKET M2392 FURNISHED BY COMPANY AND INSTALLED BY CUSTOMER.



UNDERGROUND INDUSTRIAL 3Ø TRANSFORMER RATED METER INSTALLATION WITH ONLY ONE CUSTOMER 480V TRANSFORMER 500kVA AND ABOVE

DRAWN BY A.A.W.B. DATE 4/1/88 TRACED BY A.A.W.B. SCALE NONE APPROVED	REVISIONS	GEORGIA POWER COMPANY	COM00021

SECONDARY DESIGN

All secondary installations shall be designed to satisfy the following criterea:

1. Transformers and conductors within capacity limits.
2. Total transformer, secondary, and service voltage drop limited to 6%.
3. Voltage flicker due to motor starting limited to 6.5%.

EXAMPLE

A 60 KVA 120/208 volt three phase load with the largest motor rated at 7 1/2 HP is supplied by 3 X 25 KVA transformers and 150 feet of 2/0 Al quadruplex service drop.

Capacity Calculation:

Load = 167 Amps
Transformer Rating = 208 Amps (capable of 333 Amps)
Conductor Rating = 205 Amps

Voltage Drop Calculation:

Transformer = 1.25% from Table
Conductor = 150/100 feet x 0.037 x 60 KVA = 3.33%
Total = 4.58% (less than 6% limit)

Flicker Calculation

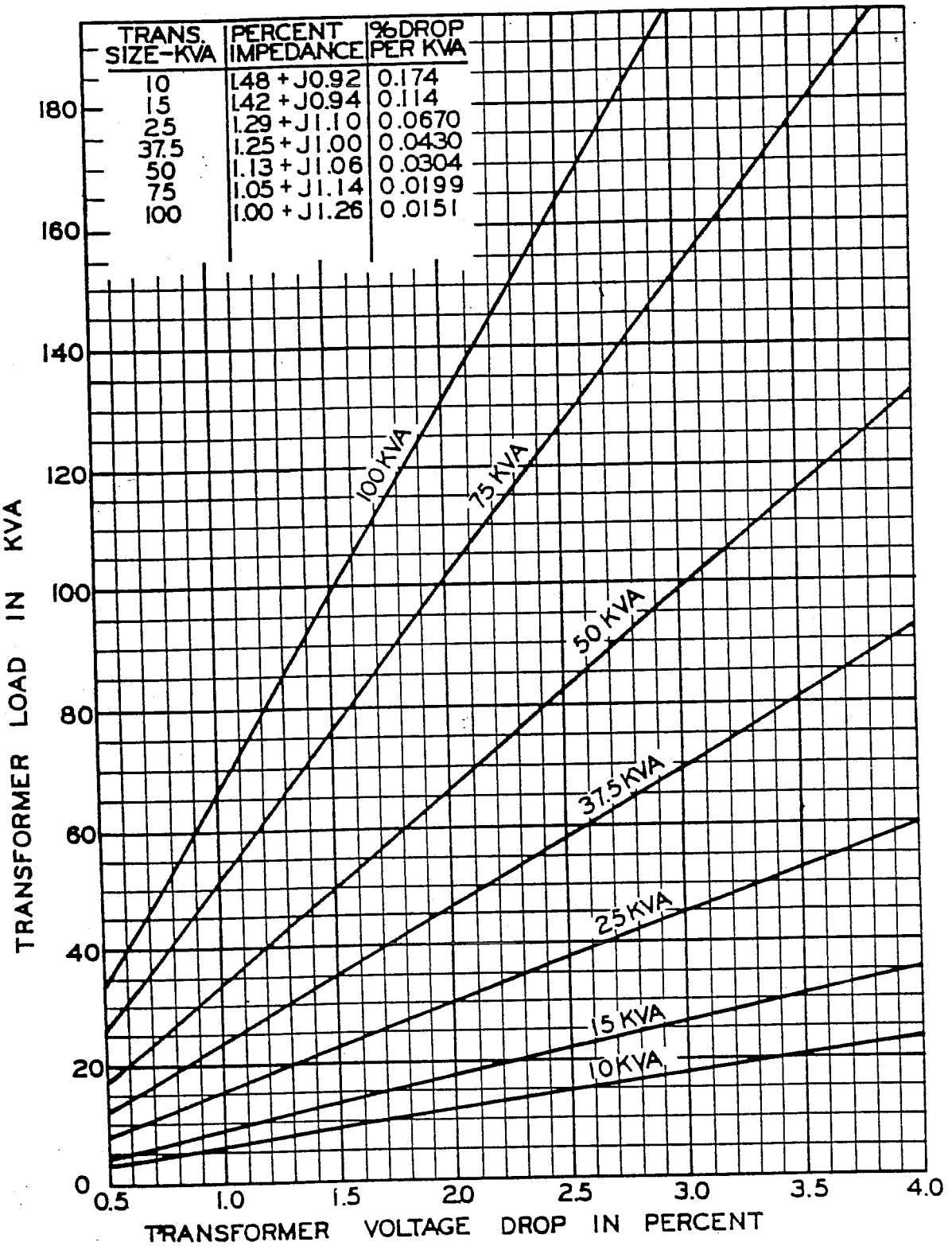
Assume motor starting KVA is 7 times the rated HP.

Starting KVA = 7 x 7.5 HP = 53 KVA
Drop in Conductor = 150/100 x 0.037 x 53 KVA = 2.94%
Drop in Transformer = 3.15% from Table
Total = 6.09% (less than 6.5% limit)

PROPERTIES OF ALUMINUM
SERVICE CABLE WITH
FULL ACSR NEUTRAL

SIZE (AWG)	CONFIG	STRENGTH (LB)	WEIGHT (LB/1000')	CAPACITY OVERHEAD/ DIRECT BURY	CAPACITY IN DUCTS	IMPEDANCE R (OHM/100')	IMPEDANCE X (OHM/100')	% VOLTAGE DROP PER KVA PER 100 FT 120/240	120/208	240-DELTA
336.4	QUADRUPLEX SERVICE DROP	8680	1631.9	370	N/A	0.00624	0.00343		0.016	0.012
4/0	QUADRUPLEX SERVICE DROP	8350	1079.1	275	N/A	0.00981	0.00362		0.024	0.018
2/0	QUADRUPLEX SERVICE DROP	5310	707.2	205	N/A	0.01545	0.00379		0.037	0.028
4/0	TRIPLEX SERVICE DROP	8350	816.4	315	N/A	0.00981	0.00362	0.036		
2/0	TRIPLEX SERVICE DROP	5310	544.0	235	N/A	0.01545	0.00379	0.055		
1/0	TRIPLEX SERVICE DROP	4380	432.0	205	N/A	0.01951	0.00392	0.069		
#2	TRIPLEX SERVICE DROP	2850	272.2	150	N/A	0.03106	0.00434	0.109		
#4	TRIPLEX SERVICE DROP	1860	180.0	115	N/A	0.04886	0.00466	0.170		
#4	DUPLEX SERVICE DROP	1860	118.8	115	N/A	0.04886	0.00466	0.170		
#6	DUPLEX SERVICE DROP	1190	80.3	85	N/A	0.07822	0.00489	0.272		
4/0	QUADRAPLEX 600V UD		1128.8	290	225	0.00981	0.00589		0.026	0.020
4/0	TRIPLEX 600V UD		846.7	315	240	0.00981	0.00589	0.040		
1/0	TRIPLEX 600V UD		475.8	215	160	0.01951	0.00684	0.072		
#4	TRIPLEX 600V UD		206.1	126	90	0.04886	0.00813	0.172		

TRANS. SIZE-KVA	PERCENT IMPEDANCE	%DROP PER KVA
10	1.48 + J0.92	0.174
15	1.42 + J0.94	0.114
25	1.29 + J1.10	0.0670
37.5	1.25 + J1.00	0.0430
50	1.13 + J1.06	0.0304
75	1.05 + J1.14	0.0199
100	1.00 + J1.26	0.0151



PERCENT DROP VERSUS KVA LOAD FOR TYPICAL TRANSFORMERS

DRAWN BY J. J. S.	DATE 11-11-60	REVISIONS 1-1-65	NUMBER
TRACED BY J. P. T.	SCALE NONE	12-29-69	A-307-G.O.
APPROVED J.L.V. R.R.C. 12-29-69			

CALCULATION OF SECONDARY FLICKER AND VOLTAGE DROP DUE TO STARTING AND RUNNING SMALL 1Φ 240 V. MOTORS

STARTING VOLTAGE DROP CONTRIBUTION OF TRANSFORMER = T% DROP PER H.P.

TRANSFORMER SIZE	% STARTING DROP PER H.P.
10 KVA	T = 1.10%
15 KVA	T = 0.71%
25 KVA	T = 0.42%
37.5 KVA	T = 0.27%
50 KVA	T = 0.19%
75 KVA	T = 0.13%
100 KVA	T = 0.10%

STARTING VOLTAGE DROP CONTRIBUTION OF CONDUCTOR = C% DROP PER 100 FT. PER H.P.

CONDUCTOR SIZE	% STARTING DROP PER H.P.
Nº. 2 ACSR	C = 0.74%
Nº. 1/0 ACSR	C = 0.54%
Nº. 4/0 ACSR	C = 0.35%
Nº. 2 PAC OR TA	C = 0.57%
Nº. 1/0 PAC OR TA	C = 0.37%
Nº. 4/0 PAC OR TA	C = 0.20%

$$\text{SECONDARY STARTING VOLTAGE DROP} = \text{MOTOR RATED H.P.}\left[T + C\left(\frac{\text{CONDUCTOR LENGTH}}{100}\right)\right]$$

$$\text{SECONDARY RUNNING VOLTAGE DROP} = \frac{\text{SECONDARY STARTING VOLTAGE DROP}}{5.62}$$

EXAMPLE

5 H.P., 240 V. MOTOR
25 KVA TRANSFORMER
135 FT. Nº. 1/0 TA

% STARTING DROP = $5[0.42 + 0.37\,(1.35)]$

STARTING DROP = 4.6%

RUNNING DROP = $\frac{4.6}{5.62} = 0.82\%$

NOTE: IF MOTOR RATED HORSEPOWER IS NOT KNOWN, THE FOLLOWING APPROXIMATIONS MAY BE USED:

MOTOR RATED H.P. = $\frac{\text{BTU/HR CAPACITY}}{7400} = 1.6$ (TONNAGE CAPACITY)

$= \frac{\text{RUNNING AMPS}}{4.7} = \frac{\text{STARTING AMPS}}{26}$

CALCULATIONS ARE FOR A TYPE "G" MOTOR WITH 6.29 INRUSH KVA PER H.P.

DRAWN BY J.J.S. DATE 1-15-69 TRACED BY B.G.H. SCALE NONE APPROVED 2-1-69	REVISIONS 2-1-69 7-1-70	GEORGIA POWER COMPANY A-415-60

POLE AND GUY
SIZING

TRANSFORMER KVA		3	5	7.5	10	15	25	37.5	50	75	100	167	250
SINGLE PHASE		5	5	5	5	5	5	5	5	4	4	3	1
BANKS OF TWO TRANSFORMERS	3 KVA	5	5	5	5	5	5	5	5	4	4	3	1
	5 KVA		5	5	5	5	5	5	5	4	4	3	1
	7.5 KVA			5	5	5	5	5	4	4	4	3	1
	10 KVA				5	5	5	5	4	4	4	3	1
	15 KVA					5	5	5	4	4	4	3	1
	25 KVA						5	4	3	3	3	3	1
	37.5 KVA							3	3	3	3	3	1
	50 KVA								3	3	3	3	1
	75 KVA									3	3	2	1
	100 KVA										3	2	1
	167 KVA											2	1
	250 KVA												1
BANKS OF THREE TRANSFORMERS	2-3 KVA	5	5										
	2-5 KVA		5	5	5								
	2-7.5 KVA			5	5	5							
	2-10 KVA				5	5					•		
	2-15 KVA					4	4						
	2-25 KVA						4	4	3				
	2-37.5 KVA							3	3	3			
	2-50 KVA								3	3	2		
	2-75 KVA									2	2		
	2-100 KVA										2	2	
	2-167 KVA											2	1
	2-250 KVA												1

EXAMPLES: 1. FIND CLASS OF POLE REQUIRED FOR BANK OF 1-25 KVA & 1-10 KVA TRANSFORMER. LOOK IN 25 KVA VERTICAL COLUMN AND 10 KVA HORIZONTAL COLUMN OPPOSITE BANKS OF TWO TRANSFORMERS. RESULT: CLASS 5 POLE.

2. FOR 2-15 AND 1-25 LOOK IN 25 KVA VERTICAL COLUMN AND 2-15 KVA HORIZONTAL COLUMN OPPOSITE BANKS OF THREE TRANSFORMERS. RESULT: CLASS 4 POLE.

EXCEPTIONS: 1. THIS TABLE IS FOR NEW CONSTRUCTION. WHERE POLE IN PLACE IS NOT OVER ONE CLASS SMALLER, DO NOT CHANGE.

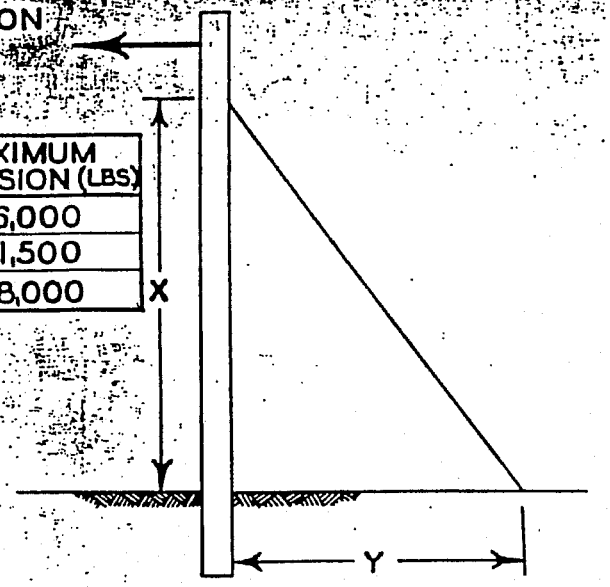
2. WHEN INSTALLING TRANSFORMERS WITH CAST IRON CASES. USE POLE ONE CLASS LARGER THAN SHOWN ABOVE.

RECOMMENDED CLASS OF POLE FOR TRANSFORMER INSTALLATION ON SINGLE POLE—ALL VOLTAGES

DRAWN BY H.G.B. DATE 4-22-65	REVISIONS	NUMBER
TRACED BY C.R.S. SCALE		A-298-GO
APPROVED R.A.D. Chang		

TOTAL MAXIMUM TENSION IN ALL CONDUCTORS (SEE PAGE 11.60)

GUY WIRE SIZE	NUMBER OF STRANDS	MAXIMUM TENSION (LBS)
5/16"	7	6,000
3/8"	7	11,500
7/16"	7	18,000



RATIO OF X/Y	MULTIPLIER
0 *	1.49
.5	1.67
1.0	2.11
1.5	2.69
2.0	3.34
2.5	4.02
3.0	4.72

*HEAD GUY

GUYING STRENGTH NECESSARY = TOTAL MAXIMUM TENSION X MULTIPLIER

EXAMPLE: FIGURE GUYING STRENGTH NECESSARY TO HOLD 3 NO. 1/0 ACSR AND 1 NO. 2 ACSR. GUY ATTACHMENT IS 32' ABOVE GROUND. ANCHOR IS TO BE 22' FROM POLE.

MAXIMUM TENSION = 3X2034+1800 = 7902 LBS.

RATIO OF X/Y = 32/22=1.45

GUYING NECESSARY 2.69 X 7902=21,256LBS.

THEREFORE USE(2)11.5M GUYS.

DEAD END GUYING TABLE

DRAWN BY J.C.H.	DATE SEPT. 1964	REVISIONS	NUMBER
TRACED BY C.R.S.	SCALE		A-341-GO
APPROVED ECB 1-1-66			

	STRINGING TENSIONS(LBS)				MAXIMUM LOADED TENSION *
TEMP. °F	45°	60°	75°	90°	
WIRE SIZE	A.C.S.R.				
636 MCM	1713	1659	1609	1562	3276
336.4MCM	1260	1206	1158	1110	3000
4/0	797	762	730	701	2616
1/0	397	380	364	349	2034
2	292	280	268	257	1800
2 PVC	464	449	436	423	1776
1/0PVC	624	605	586	569	1992
4/0PVC	1009	978	948	920	2496
336.4MCMPVC	1402	1358	1317	1278	3000
COPPER					
4/0	1452	1307	1188	1089	3000
1/0	724	651	592	543	2238
2	446	402	365	335	1750
3	354	319	290	265	1500
2 PVC	544	504	470	440	1776
TRIPLEX					
4/0TRI.	921	882	847	815	2280
1/0TRI.	498	477	458	441	1668

* USE FOR DETERMINING GUYING STRENGTH.

CONDUCTOR TENSION TABLE

DRAWN BY E.C.B. DATE DEC. 1964	REVISIONS	NUMBER	
TRACED BY C.R.S. SCALE		A-350-GO	
APPROVED E.C.B. C Boop 1-1-65			

ANCHORING APPLICATION GUIDE

SOIL CLASS NO.	SOIL CLASSIFICATION	TYPE ANCHORS (MATERIAL NO.) 8" EXPANDING	8" SCREW	11 5/16" SCREW	8" SQUARE	10" SWAMP ANCHOR	ROCK ANCHOR 3/4" DIA. ROD
CLASS 1	ROCK	23,000	23,000	23,000	23,000	*	23,000
CLASS 2	HARDPAN: VERY DENSE SAND: SANDSTONE	23,000	23,000	23,000	23,000	*	*
CLASS 3	HARDCLAY: DENSE SAND: BROKEN BED ROCK	23,000	18,000	23,000	18,000	*	*
CLASS 4	CLAYPAN: MEDIUM DENSE SAND: SANDY GRAVEL	20,000	14,000	20,000	14,000	*	*
CLASS 5	VERY STIFF CLAY: MEDIUM SAND	16,000	10,000	16,000	*	*	*
CLASS 6	STIFF–VERY STIFF CLAY: MEDIUM FINE TO COARSE SAND	12,000	6,000	12,000	*	*	*
CLASS 7	LOOSE. FINE SAND	10,000	6,000	10,000	*	*	*
CLASS 8	SWAMP AND MARSHES	*	*	*	*	9,000	*

HOLDING POWER IN LBS

* NOT PRACTICAL TO INSTALL IN THIS CLASS SOIL.

NOTE: 3/4" ROD HAS AN ULTIMATE STRENGTH OF 23,000 LBS.

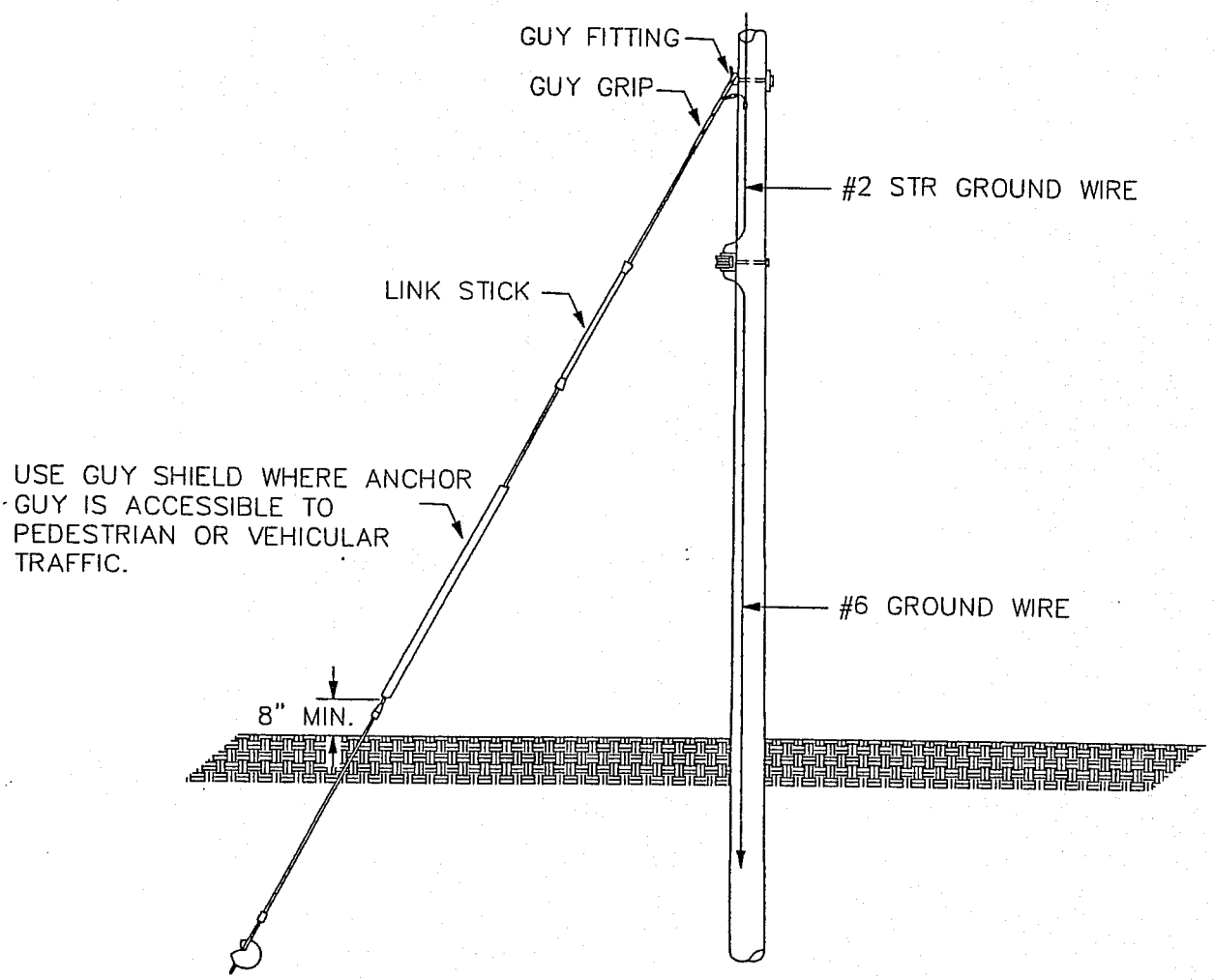
DWER ENGINEERING ASSOCIATES, INC.
MARIETTA, GA.

DATE: MARCH, 1991

REVISIONS

ELECTRIC CITIES OF GEORGIA

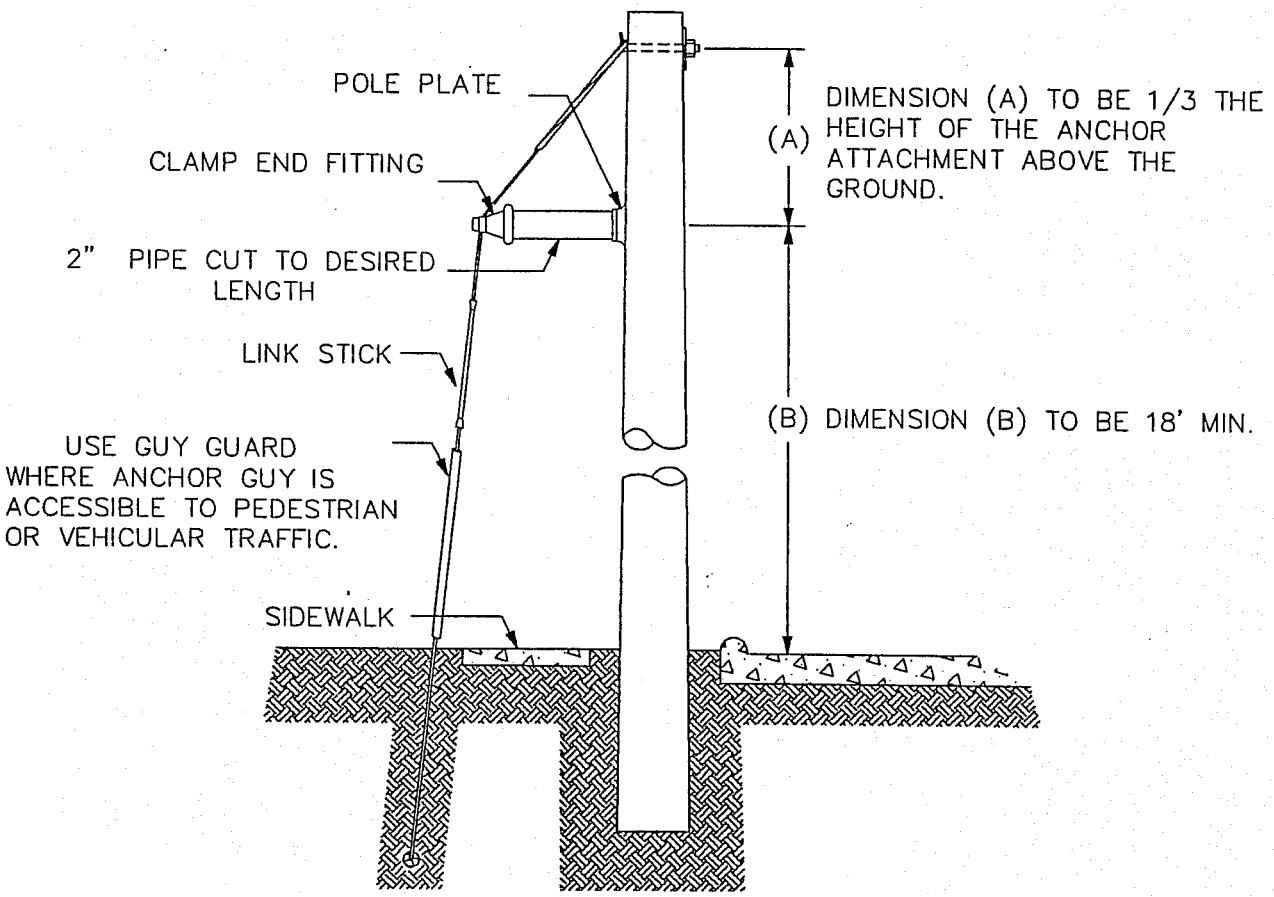
10.12



DETAIL
ANCHOR GUY

E1

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		10.01

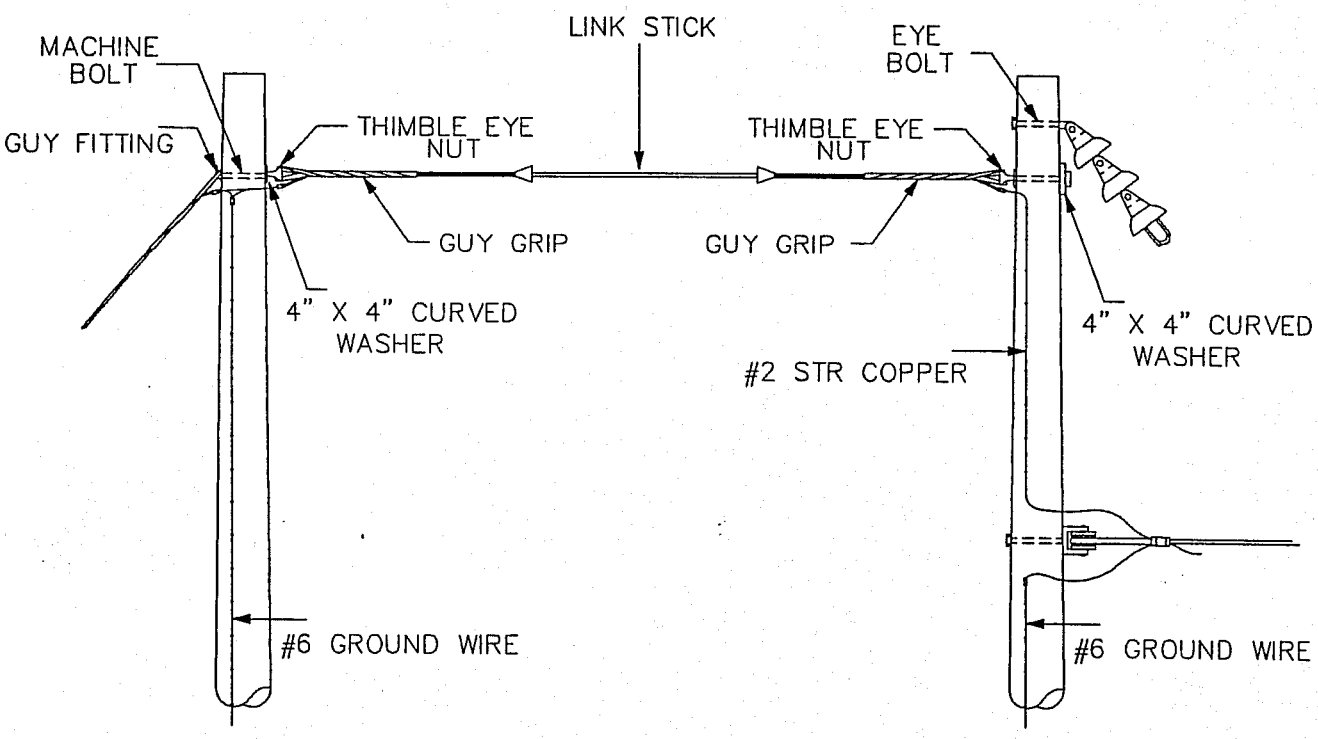


TO BE USED ONLY WHEN VERTICAL CLEARANCE UNDER GUY IS NECESSARY

SIDEWALK GUY

E-1-S

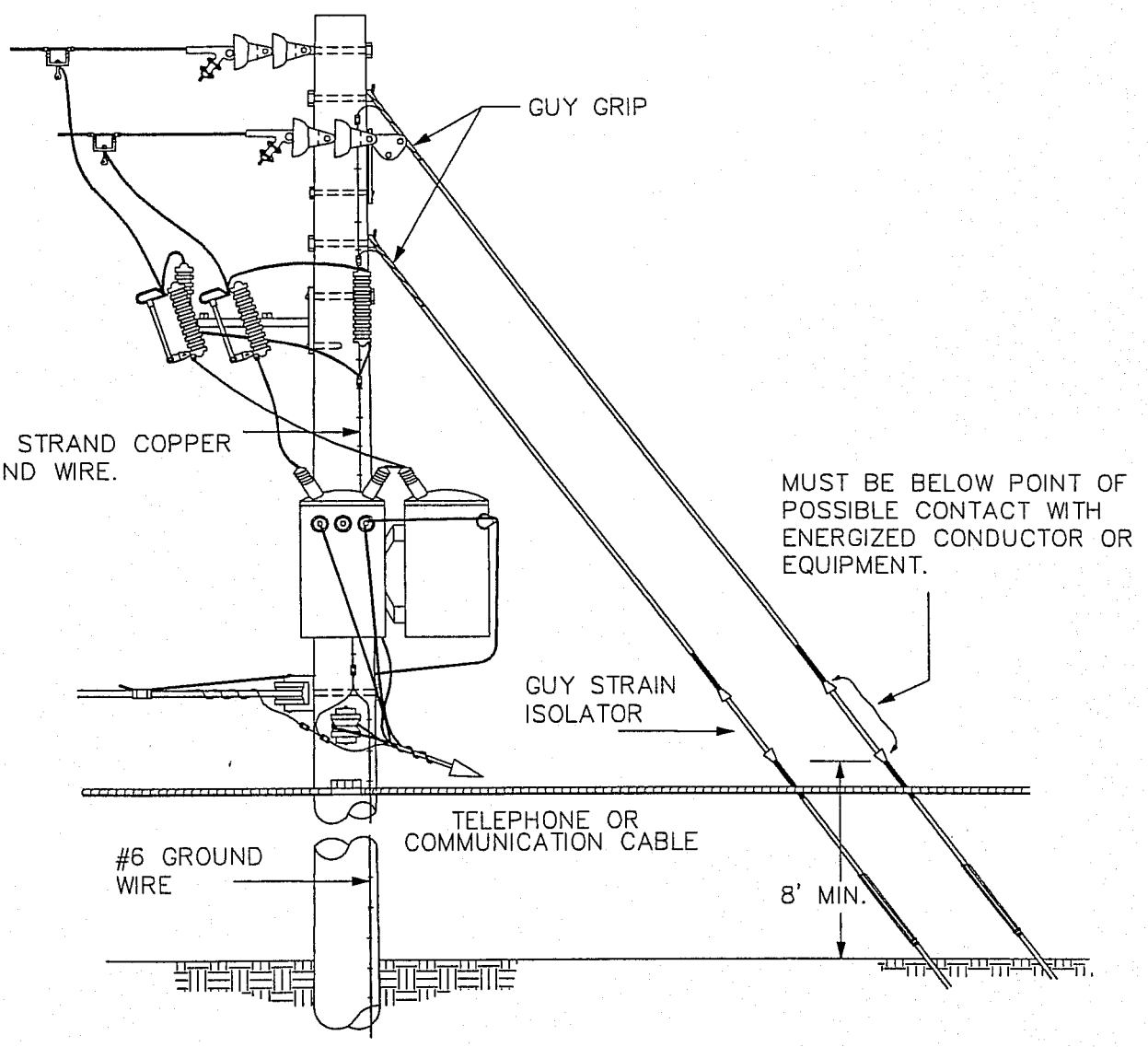
POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		10.02



NOTE:
CONNECT ALL STRANDS OF GUY WIRE
TO GROUND OR NEUTRAL.

DETAIL
SPAN GUY

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		10.06

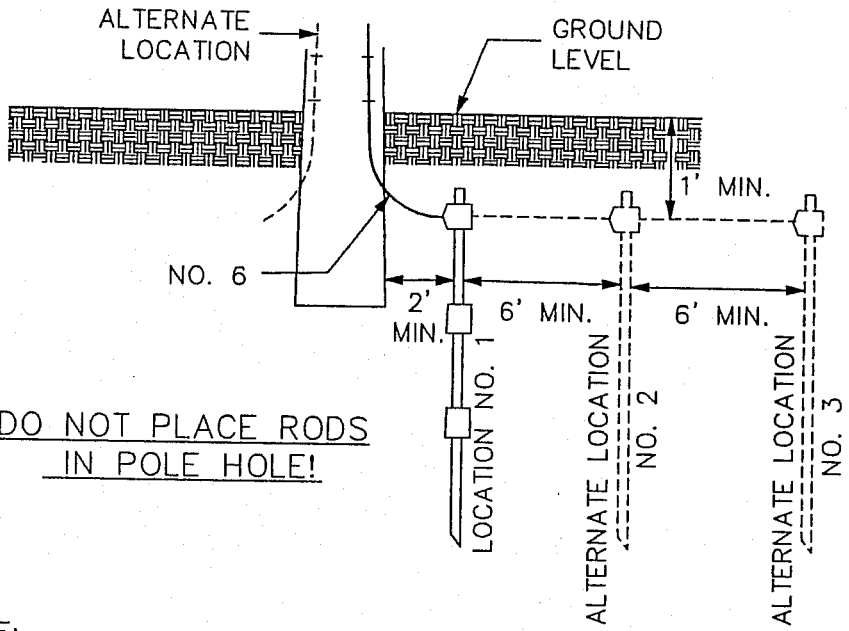


NOTE:

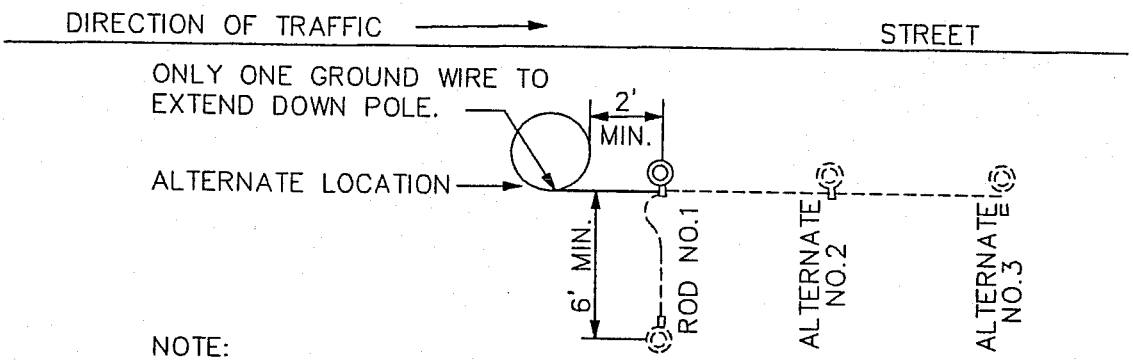
1. USE WHERE SPAN GUY MAY CONTACT ENERGIZED CONDUCTOR OR EQUIPMENT IF SPAN GUY BECOMES LOOSE OR BROKEN.
2. FIBERGLASS LINK SHOULD BE INSTALLED BELOW ENERGIZED AREA, BUT ABOVE PEDESTRIAN REACH. (MIN. 10' ABOVE GROUND)
3. INSTALL #2-7 STRAND COPPER GROUND WIRE ABOVE SYSTEM NEUTRAL. CONNECT #2-7 COPPER TO STRAND TO SYSTEM NEUTRAL AND CONNECT #6 COPPER GROUND WIRE TO #2-7 STRAND COPPER WIRE.

GUY STRAIN ISOLATOR INSTALLATION

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		10.07



NOTE:
1. GROUND RESISTANCE (MEGGAR READING) SHOULD BE 25 OHMS OR LESS AT POLES WHICH SUPPORT EQUIPMENT REQUIRING LIGHTNING ARRESTERS.
2. EQUIPMENT POLES SHOULD HAVE A MINIMUM OF 3 RODS EITHER DRIVEN AT LOCATION NO. 1 OR ONE ROD IN THREE LOCATIONS.
3. ALL OTHER POLES SHOULD HAVE AT LEAST ONE GROUND ROD.



NOTE:
IF DRIVEWAY OR OTHER OBSTRUCTIONS INTERFERE WITH THE GROUND ROD LOCATION AS SHOWN, THE GROUND LEAD DOWN THE POLE MAY BE PLACED AT ALTERNATE LOCATION.
IN CASES WHERE TELEPHONE CABLE IS IN PLACE ON FIELD SIDE OF POLE, INSTALL GROUND ON ROAD SIDE QUADRANT AWAY FROM FLOW OF TRAFFIC.

METHOD OF INSTALLING GROUND RODS

M-2

VER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		11.01

DISTRIBUTION TRANSFORMERS
SIZING AND FUSING

DISTRIBUTION TRANSFORMER FUSING

FUSING FACTOR	N FUSE	K OR T FUSE	CUTOUT RATING
1	1	1	
2	2	2	
3	3	3	
5	5	-	
8	8	6	
10	10	8	
15	15	10	50,100,200
20	20	12	
25	25	15	
30	30	20	
40	40	25	
50	45	30	
60	50	40	
75	75	50	
100	85	65	
125	95	80	100,200
150	100	100	
200	125	-	
240	150	140	200
320	200	200	

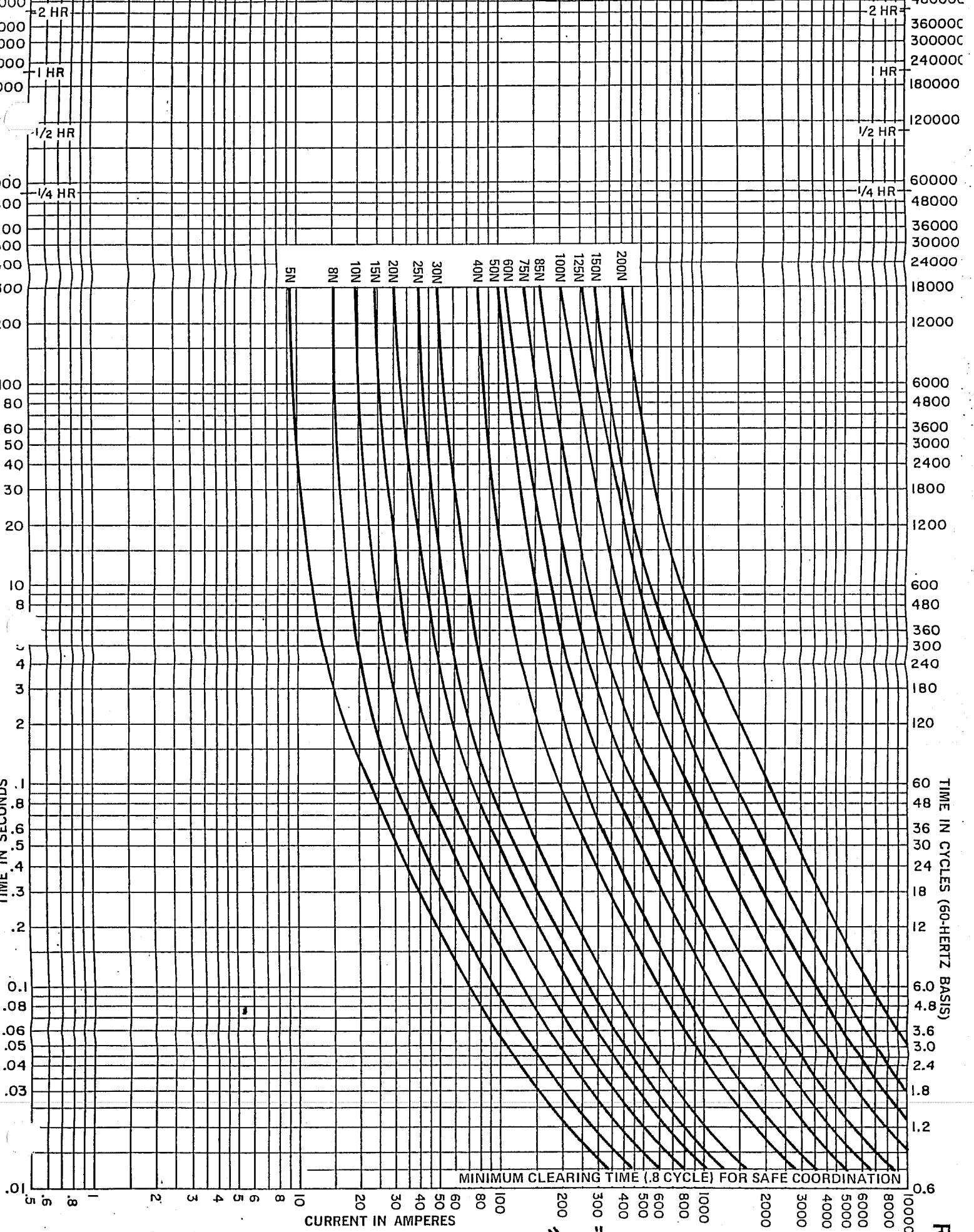
FUSING FACTOR OPTIONS

1.5 TIMES THE TRANSFORMER RATING WHERE MOTOR STARTING IS NEGLIGIBLE

2.0 TIMES THE TRANSFORMER RATING (STANDARD PRACTICE)

2.4 TIMES THE TRANSFORMER RATING(1 AMP PER KVA AT 2400 V)

3.0 TIMES THE TRANSFORMER RATING WHERE MOTOR STARTING IS SEVERE



MAXIMUM CLEARING TCC

Curves of M-E fuse links in M-E cutouts • Basis for data: NEMA Standards SG

"N"

TYPE N FUSE

R24

INITIAL LOADING				
KVA SIZE	SUMMER PEAK KVA		WINTER PEAK KVA	
	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM
5	0	6	0	7
10	6	12	7	15
15	12	18	15	22
25	18	30	22	37
37.5	30	45	37	56
50	45	60	56	75
75	60	90	75	110
100	90	120	110	145

LOADING TO JUSTIFY CHANGE OUT		
KVA SIZE	SUMMER PEAK KVA	WINTER PEAK KVA
5	8	9
10	16	18
15	24	27
25	40	45
37.5	60	67
50	80	90
75	115	130
100	155	175

NOTE: IN THOSE CASES WHERE NO LOAD GROWTH IS EXPECTED, LOAD ON INITIAL INSTALLATION MAY BE INCREASED ABOVE THAT SHOWN FOR INITIAL LOADING.

DISTRIBUTION TRANSFORMER LOADING

DRAWN BY E.C.B. DATE FEB. 1964 TRACED BY C.R.S. SCALE APPROVED E.C.B. 1-1-65	REVISIONS	NUMBER A-324-GO

ARRESTORS

Metal oxide varistor (MOV) arrestors are to be used for all new construction.

Arrestor leads should be as short as possible in order to maintain the lowest possible discharge voltage and highest possible protection level.

Arrestors are to be installed on the source side of cutouts protecting transformer, capacitor, cable risers and other appropriate distribution equipment. Underground cables shall be protected by riser pole or station class arrestors.

Arrestors are to be installed at all normally open and deadend points in order to reduce the possibility of flashover from surge reflection.

Arrestor grounds are to be 25 ohms or less and connected to the arrestor with #6 Cu or larger.

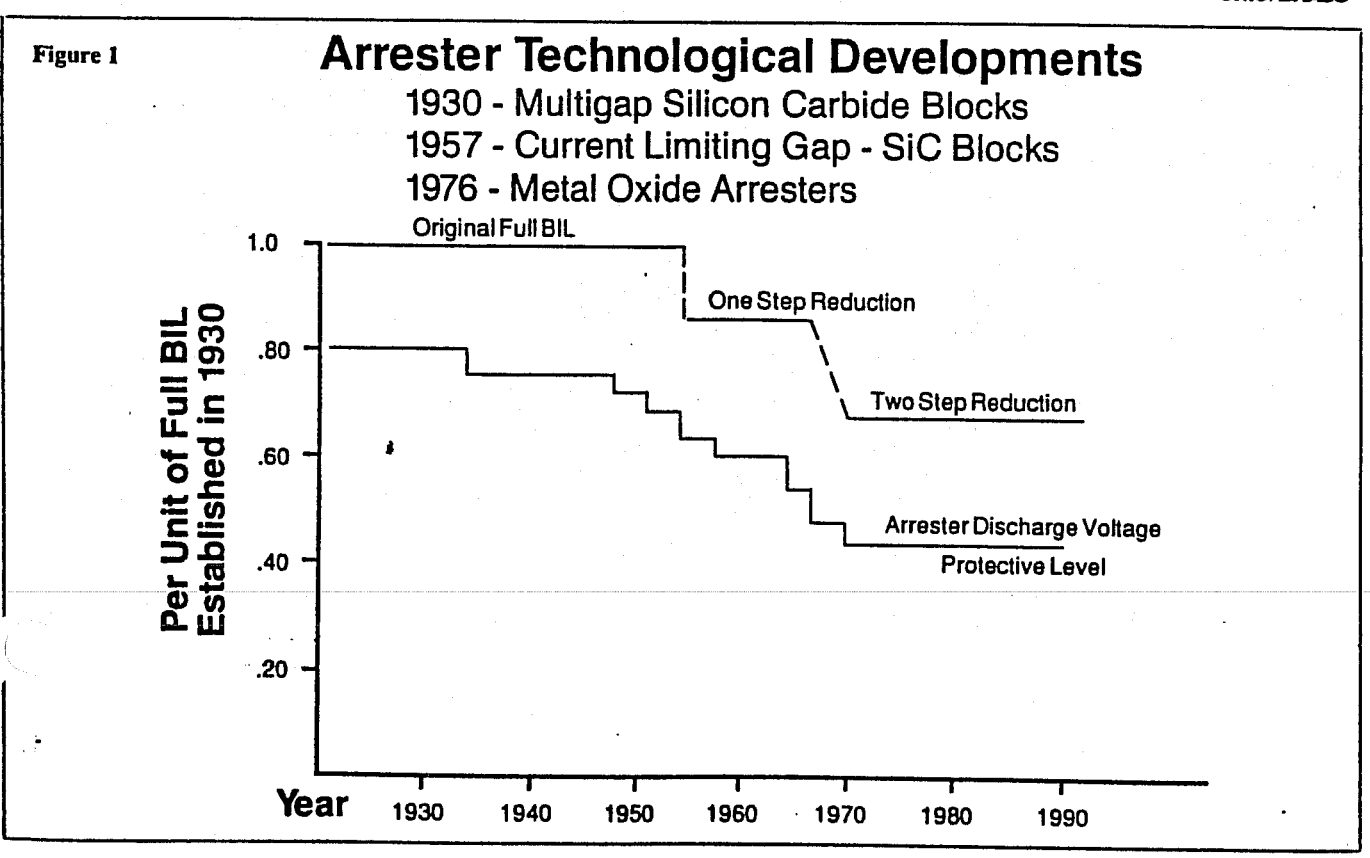
Why Should You Replace Old Station and Intermediate Class Arresters?

There are a number of reasons to begin a program to identify and replace old arresters in substation locations:

1. **Better Equipment Protection**
   A. There have been substantial reductions in the IR discharge voltages of arresters over the years. (See Figure 1). Installing new arresters can add substantially to the protection you give an old transformer.
   B. The metal oxide arresters eliminate front-of-wave sparkover. The equivalent discharge voltage provides 15 percent better protection.
2. **More Durable Arresters — Greater Safety**
   A. Arresters made prior to 1957 probably have little, if any, pressure relief capability. An arrester failure may be violent.
3. **Reduced Chance of Failures Due to Contamination**
   A. Gapped silicon carbide arresters may be prone to failure when surface leakage currents upset the grading and cause internal sparkover. Replacing these arresters should be a number one priority because they may have no pressure relief.
   B. Metal oxide arresters have high resistance to contamination problems.
4. **Reduced Circuit Breaker Costs**
   A. Switching surge voltages can be reduced by use of pre-insertion resistors in the circuit breaker design. However, properly located modern MOV arresters can absorb so much energy that the resistors can often be omitted.
   If resistors in older breakers are damaged or require frequent maintenance, it may be more economical to install arresters of a modern MOV design.

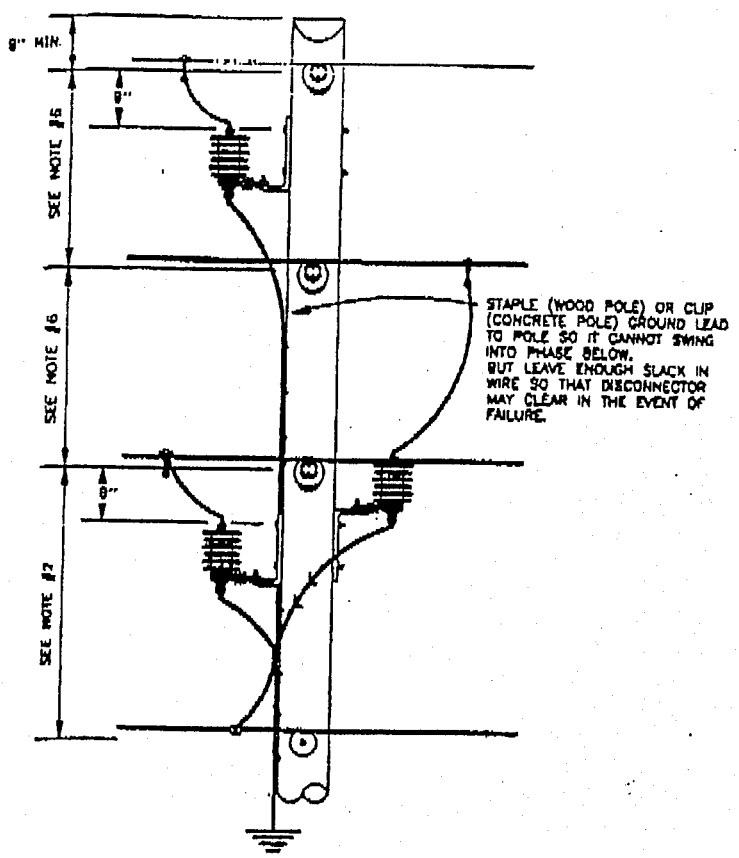
OHIO BRASS

Figure 1



POST INSULATOR CONSTRUCTION
TANGENT POLE
13 & 23 KV

E-5.3.3



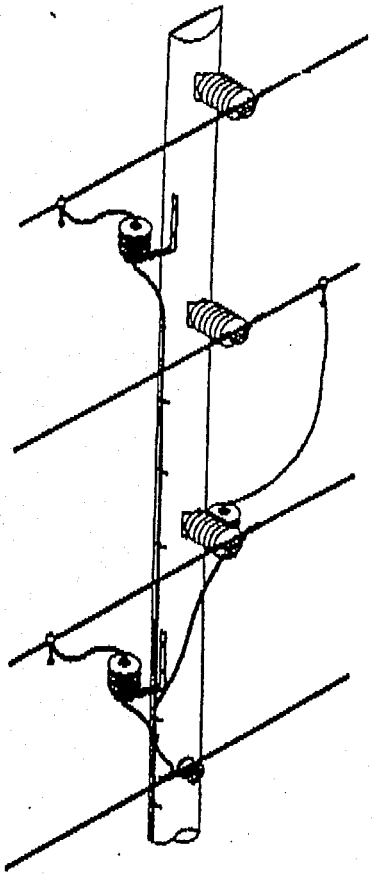


FIGURE 1.
VERTICAL CONSTRUCTION
ARRESTER INSTALLATION

NOTES:

1. ALL POST INSULATORS SHOWN ARE 35KV TIE TOP. USE CLAMP TOPS WHERE INDICATED BY ANGLE AND SIDE PULL LIMITATIONS SHOWN ON E-4. USE 45KV POST INSULATORS (CLAMP TYPE) ON 23KV CIRCUITS IN SALT CONTAMINATED AREAS.
2. PRIMARY TO NEUTRAL SEPARATION AT POLE DETERMINED BY MINIMUM MIDSPAN SEPARATION (DERM 4.4.1). IN NO CASE SHALL SEPARATION AT POLE BE LESS THAN 60" FOR WOOD POLES 40" FOR CONCRETE POLES.
3. "MINIMUM" DIMENSIONS MAY BE USED TO AVOID POLE CHANGEOUT OR EXCESSIVE GRADING TO A TALLER POLE.
4. SEE E-5.9 FOR VERTICAL DEADEND CONFIGURATION FIGURE 3.
5. POLYMER ARRESTERS TO BE USED WITH THIS FRAMING.
6. VERTICAL SPACING : 24" MINIMUM CONCRETE POLES
   32" MINIMUM WOOD POLES

SUPERSEDES E-5.3 LAST REVISED ON 3-1-88

STANDARDS
OH & UG DISTRIBUTION SYSTEM
FLORIDA POWER & LIGHT COMPANY

NO	DATE	REVISION	ORIG.	DR.	DES CHECKED	ODS	APP.
1	MAR 1 90	REVISED NOTE #2 AND ADDED NOTE #6 FOR VERTICAL SEPARATION.		H.D.			

ORIG. J.M.
DRAWN: J.R. FILARDO
(DES) C.W.H. (ODS) J.S.B. DATE: 1-1-90
CHECKED

NO SCALE

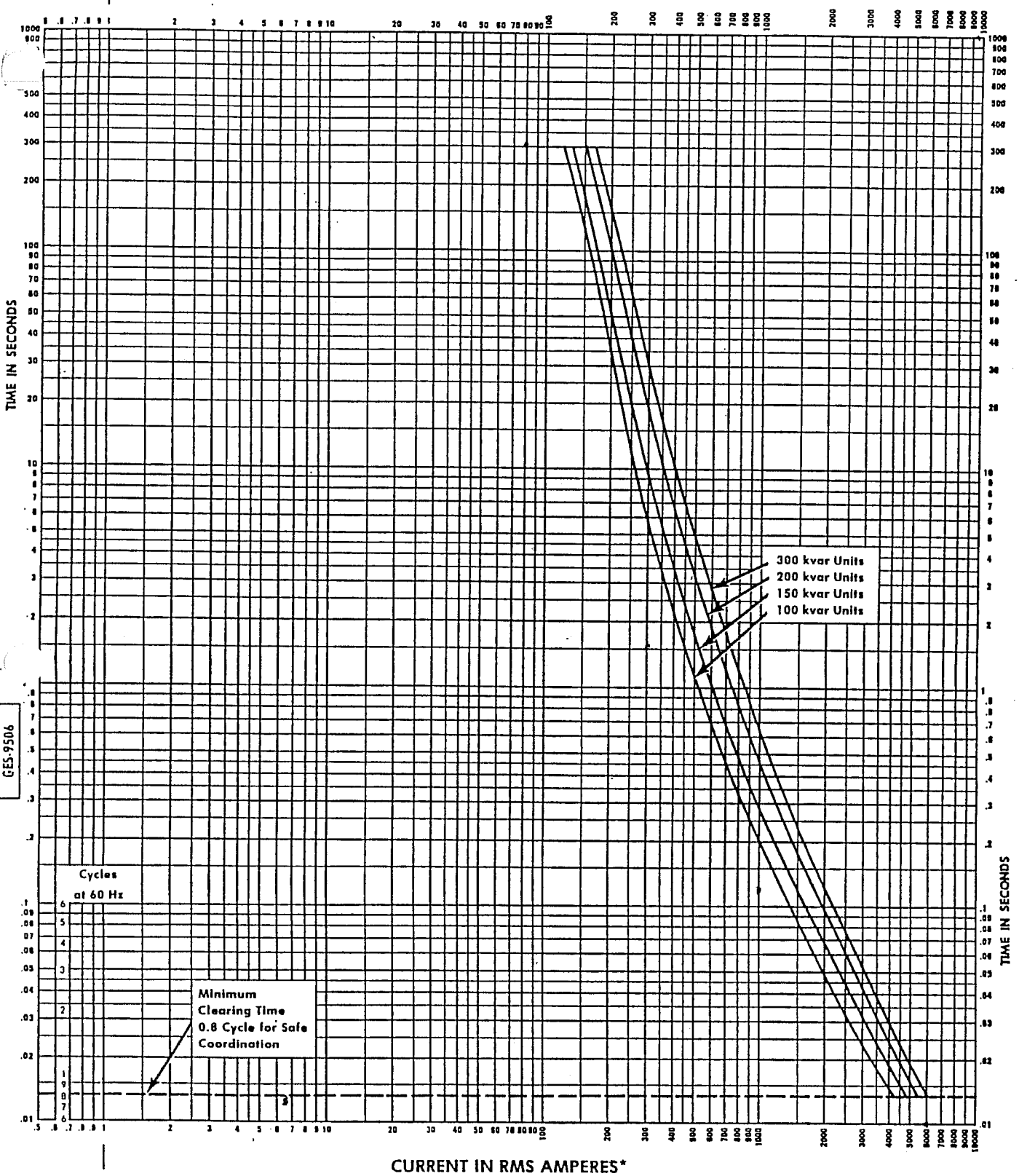
APPROVED
R.K. CIELO
DIRECTOR, DISTRIBUTION ENGINEERING AND SERVICE PLANNING

CAPACITORS

Capacitors installed in most locations shall be fused at a point to the left of the 10% probability case rupture curve.

Capacitors installed in locations where tank rupture and fluid leakage do not create a hazardous condition may be fused between the 10% and 50% probability case rupture curves.

Current limiting fuses shall be installed at any location where fusing results in a point located to the right of the 50% probability case rupture curve.



GES-9506

GENERAL ELECTRIC

DIELEKTROL III™ FILM/FOIL CAPACITOR UNITS

10% PROBABILITY CASE RUPTURE

GES-9506

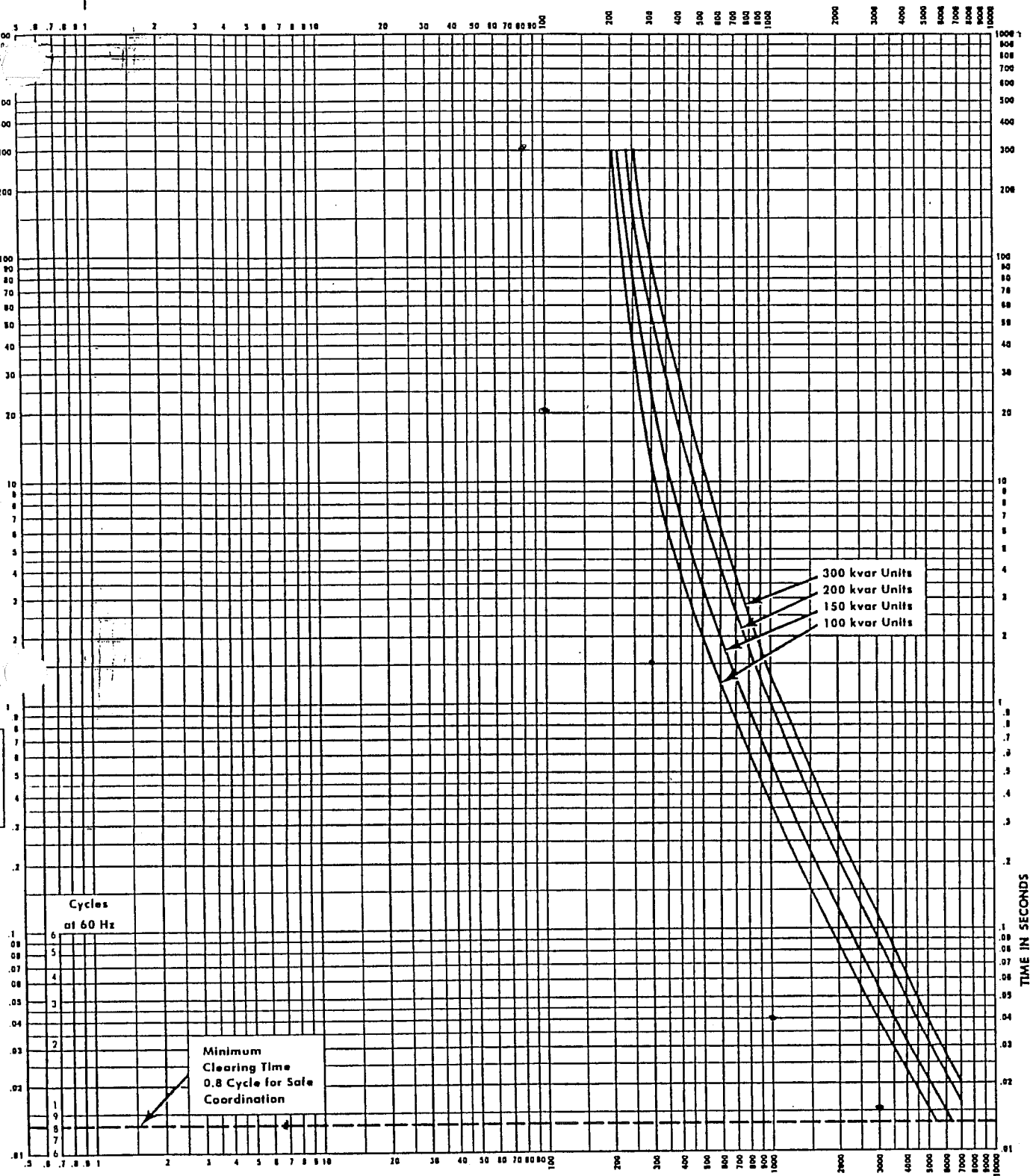
Safe Zone—Fuse clearings to the left of these curves are safe for most applications. Usually no greater damage than slight swelling of the case will result.

Note—See GES-9507 for fuse clearings to the right of these curves.

* For times shorter than one cycle, use asymmetrical rms amperes.

CAPACITOR PRODUCTS DEPT., HUDSON FALLS, N. Y. 12839

CURRENT IN RMS AMPERES*



CURRENT IN RMS AMPERES*

GENERAL ELECTRIC

DIELEKTROL III™ FILM/FOIL CAPACITOR UNITS

50% PROBABILITY CASE RUPTURE

GES-9507

Zone 1 -- Fuse clearings to the left of these curves but above the 10% probability curves of GES-9506, are suitable for locations where case rupture and or fluid leakage would present no hazard

Zone 2 -- Fuse clearings to the right of these curves are suitable for locations which have been chosen after careful consideration of possible consequences associated with violent rupture of case.

* For times shorter than one cycle, use asymmetrical rms amperes.

9 78 12M1

CAPACITOR PRODUCTS DEPT., HUDSON FALLS, N. Y. 12839

NATIONAL ELECTRIC SAFETY CODE
CLEARANCE REQUIREMENTS

NATURE OF SURFACE UNDERNEATH WIRES, CONDUCTORS, OR CABLES	COMMUNICATION WIRE & CABLES, GUYS, MESSENGERS, NEUTRAL CONDUCTORS EFFECTIVELY GROUNDED. DUPLEX, TRIPLEX, & QUADRAPLEX SECONDARY (IN FEET)	0 TO 750 V. OPEN WIRE SECONDARY (IN FEET)	OPEN SUPPLY LINE CONDUCTORS (IN FEET)	
			750 V. –22KV	22KV –50KV
		VOLTAGES ARE PHASE TO GROUND.		
WHERE WIRES CROSSES OVER	MINIMUM VERTICAL CLEARANCE			
A: TRACK RAILS OF RAILROADS	33 FEET MINIMUM ALL CLASSES			
B: ROADS, STREETS, ALLEYS, NON–RESIDENTIAL DRIVEWAYS, PARKING LOTS, AND OTHER AREAS SUBJECT TO TRUCK TRAFFIC (8' IN HEIGHT)	18	18	20	21
C: RESIDENTIAL DRIVEWAYS, COMMERCIAL AREAS NOT SUBJECT TO WORK TRUCK TRAFFIC (8' IN HEIGHT)	12	15	20	21
D: OTHER LAND TRAVERSED BY VEHICLES SUCH AS CULTIVATED, GRAZING, FOREST, ORCHARD, ETC.	18	18	20	21
E: SPACES OF WAYS ACCESSIBLE TO PEDESTRIANS ONLY.	15★	15	15	16
F: WATER AREAS NOT SUITABLE FOR SAILBOATING OR WHERE SAILBOATING IS PROHIBITED.	15	15	17	17
G: WATER AREAS SUITABLE FOR SAIL–BOATING INCLUDING LAKES, PONDS, RESERVOIRS, TIDAL WATERS, RIVERS, STREAMS, AND CANALS WITH AN UNOBSTRUCTED SURFACE AREA:				
(1) LESS THAN ACRES	18	18	20	21
(2) 20 TO 200 ACRES	26	26	28	29
(3) 200 TO 2000 ACRES	32	32	34	35
(4) OVER 2000 ACRES	38	38	40	41
*H: PUBLIC OR PRIVATE LAND AND WATER AREAS POSTED FOR RIGGING OR LAUCHING SAILBOATS.				

* CLEARANCE ABOVE GROUND SHALL BE 5 FEET GREATER THAN IN "G" ABOVE, FOR THE TYPE OF WATER AREAS SERVED BY THE LAUNCHING SITE.

NOTE: FOR "E"

★ MAY BE REDUCED TO 12 FEET FOR QUADRAPLEX, TRIPLEX, & DUPLEX OPERATING AT 300 VOLTS TO GROUND OR LESS.

NOTE FOR "G" & "H":

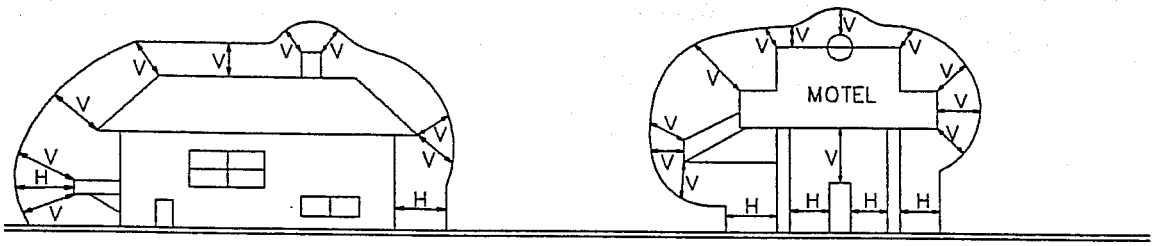
(A:) FOR CONTROLLED IMPOUNDMENTS, THE SURFACE AREA AND CORRESPONDING SHALL BE BASED UPON THE DESIGN HIGH WATER LEVEL. FOR OTHER WATERS, THE SURFACE AREA SHALL BE THAT ENCLOSED BY ITS ANNUAL HIGH WATER MARK, AND CLEARANCE SHALL BE BASED ON THE NORMAL FLOOD LEVEL. THE CLEARANCE OVER RIVERS, STREAM, AND CANALS SHALL BE BASED UPON THE LARGEST SURFACE AREA OF ANY 1 MILE LONG SEGMENT WHICH INCLUDES THE CROSSING. THE CLEARANCE OVER A CANAL, RIVER, OR STREAM NORMALLY USED TO PROVIDE ACCESS FOR SAILBOATS TO A LARGER BODY OF WATER SHALL BE THE SAME AS THAT REQUIRED FOR THE LONGER BODY OF WATER.

(B:) WHERE THE U.S. ARMY CORPS OF ENGINEERS, OR THE STATE, OR A SURROGATE THEREOF HAS ISSUED A CROSSING PERMIT, CLEARANCES OF THAT PERMIT SHALL GOVERN.

FOR MORE INFORMATION OR DETAILS SEE RULE 232 AND TABLE 232–1 IN THE NATIONAL ELECTRICAL SAFETY CODE, CURRENT EDITION.

MINIMUM VERTICAL CLEARANCES OF WIRES, CONDUCTORS, AND CABLES ABOVE GROUND, RAILS, OR WATER.

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		5.01



V – MINIMUM VERTICAL CLEARANCE MEASURED EITHER DIAGONALLY OR VERTICAL

H – MINIMUM HORIZONTAL CLEARANCE

CLEARANCE OF BUILDINGS	COMMUNICATION WIRES & CABLES, GUY, MESSENGERS, NEUTRAL CONDUCTORS, EFFECTIVELY GROUNDED DUPLEX, TRIPLEX, & QUADRAPLEX SECONDARY (IN FEET)	0 TO 750 V. OPEN WIRE SECONDARY (IN FEET)	OPEN SUPPLY LINE CONDUCTORS (IN FEET)		
			750 V. 8.7KV	8.7KV 22KV	
		VOLTAGES ARE PHASE TO GROUND.			
HORIZONTAL					
TO WALLS AND PROJECTIONS	4.5	5	7.5	7.5	
TO UNGUARDED WINDOWS	4.5	5	7.5	7.5	
TO BALCONIES AND AREAS ACCESSIBLE TO PEDESTRIANS	4.5	5	7.5	7.5	
VERTICAL ABOVE OR BELOW ROOFS OR PROJECTIONS NOT ACCESIBLE TO PEDESTRIANS	3	10.5	12.5	12.5	
ABOVE OR BELOW BALCONIES AND ROOFS ACCESIBLE TO PEDESTRIANS	10.5	11.5	13.5	13.5	
ABOVE ROOFS ACCESSIBLE TO TRUCK TRAFFIC	15.5	16.5	18.5	18.5	
ABOVE ROOFS ACCESSIBLE TO VEHICLES, BUT NOT SUBJECT TO TRUCK TRAFFIC	10.5	11.5	13.5	13.5	
SIGNS, CHIMNEYS, RADIO AND TELEVISION ANTENNAS, TANKS AND OTHER INSTALLATIONS NOT CLASSIFIED AS BUILDINGS OR BRIDGES					
(a) HORIZONTAL	3	5.5	7.5	7.5	
(b) VERTICAL ABOVE OR BELOW	3	6	8	8	

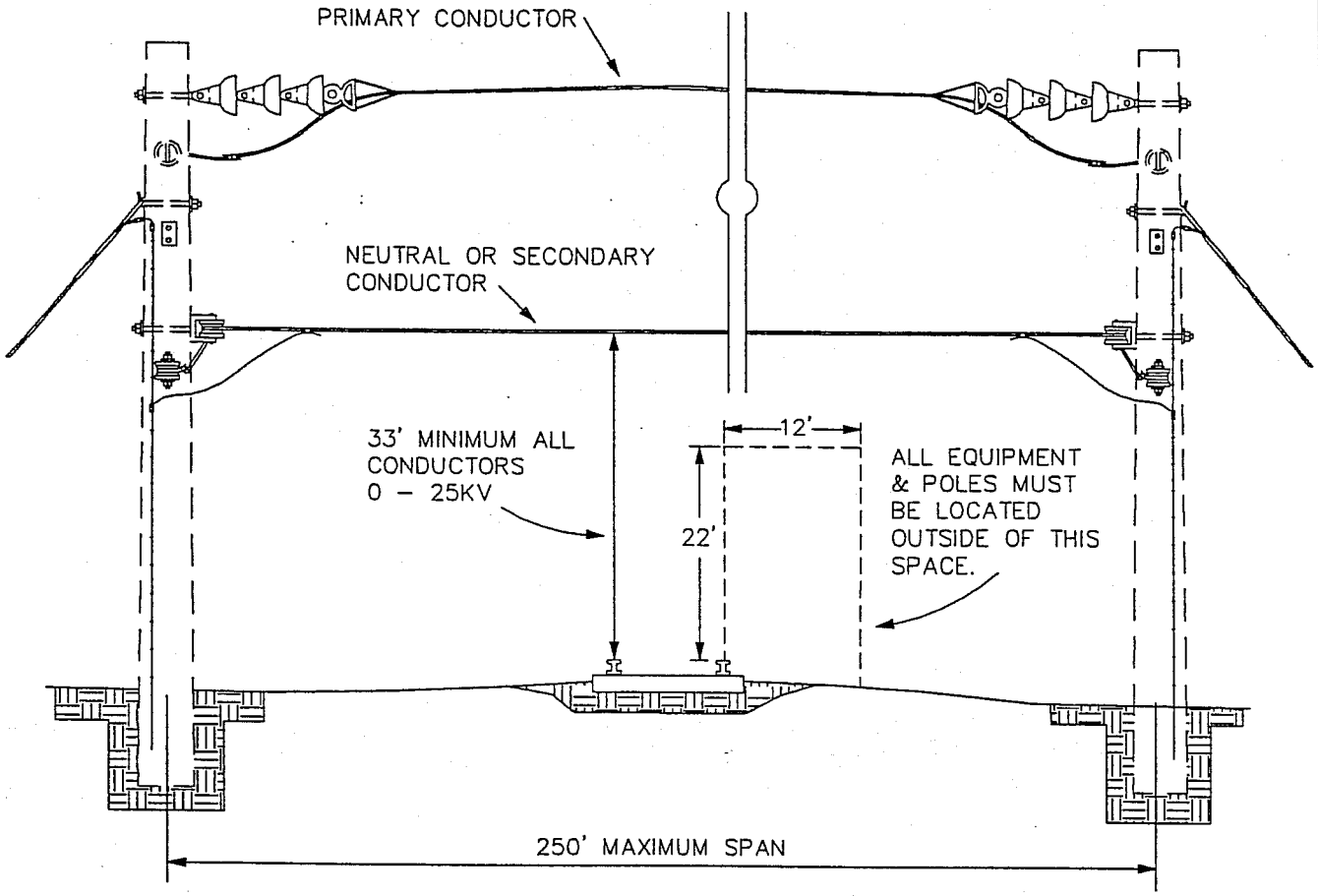
VERTICAL CLEARANCE
(a) CONDUCTOR TEMPERATURE OF 60 F., NO WIND, FINAL UNLOADED SAG IN THE WIRE, CONDUCTORS, OR CABLES.
(b) SPAN LENGTHS NOT GREATER THAN 250 FEET.

DIAGONAL CLEARANCE
THE HORIZONTAL CLEARANCE GOVERNS ABOVE THE ROOF LEVEL OR TOP OF AN INSTALLATION TO THE POINT WHERE THE DIAGONAL EQUALS THE VERTICAL CLEARANCE REQUIREMENT. SIMILARLY, THE HORIZONTAL CLEARANCE GOVERNS ABOVE OR BELOW PROJECTIONS FROM BUILDINGS, SIGNS, OR OTHER INSTALLATIONS TO THE POINT WHERE THE DIAGONAL EQUALS THE VERTICAL CLEARANCE REQUIREMENT.

FOR ADDITIONAL INFORMATION AND DETAILS SEE RULE 234 AND 234-1 IN THE NATIONAL ELECTRICAL SAFETY CODE, CURRENT EDITION.

CLEARANCES OF WIRES, CONDUCTORS AND CABLES PASSING BY BUT NOT ATTACHED TO BUILDINGS AND OTHER INSTALLATIONS EXCEPT BRIDGES.

OWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		5.02



1. IF SPAN LENGTH EXCEEDS 250', CONDUCTOR CLEARANCE IS TO BE INCREASED 0.3 FEET FOR EACH 10 FEET SPAN LENGTH EXCEEDS 250 FEET.
2. CROSSINGS SHOULD BE MADE ON A COMMON SUPPORT STRUCTURE WHERE PRACTICAL. COOPERATION BETWEEN THE PARTIES CONCERNED SHALL PREVAIL PROPER CLEARANCES.
3. EXCEPTIONS TO 12' HORIZONTAL SIDE CLEARANCE

(a) A CLEARANCE OF NOT LESS THAN 7 FEET MAY BE ALLOWED WHERE NECESSARY THE SUPPORTING STRUCTURE IS NOT THE CONTROLLING OBSTRUCTION, PROVIDED SUFFICIENT SPACE FOR A DRIVEWAY IS LEFT WHERE CARS ARE LOADED.

(b) WHERE NECESSARY TO PROVIDE SAFE OPERATING CONDITIONS WHICH REQUIRE AN UNINTERRUPTED VIEW OF SIGNALS, SIGNS, ETC. ALONG TRACKS THE PARTIES CONCERNED SHALL COOPERATE IN LOCATING STRUCTURES TO PROVIDE THE NECESSARY CLEARANCE.

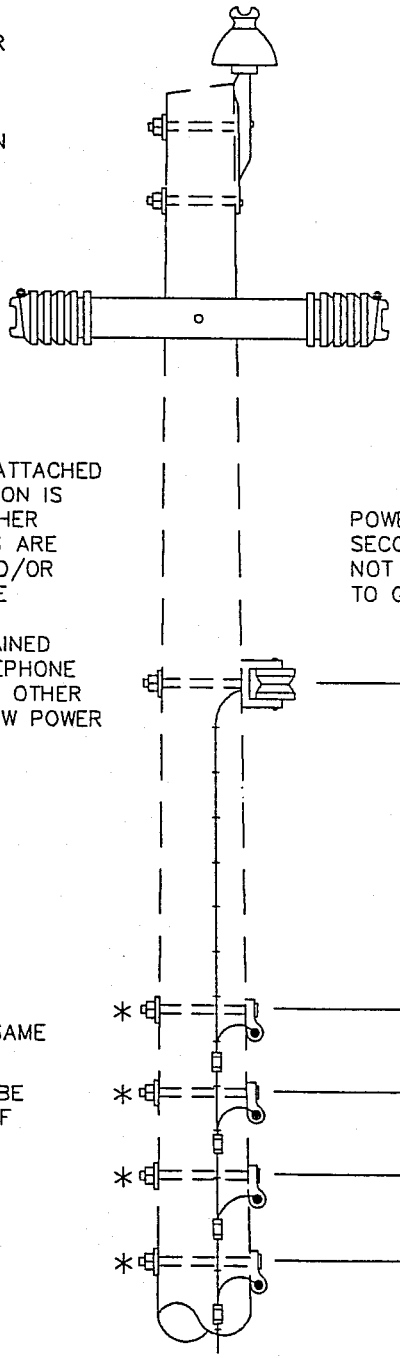
(c) AT INDUSTRIAL SIDINGS, A CLEARANCE OF NOT LESS THAN 7 FEET SHALL BE PERMITTED, PROVIDED SUFFICIENT SPACE IS LEFT WHERE CARS CAN BE LOADED OR UNLOADED.

RAILROAD CROSSING CONSTRUCTION CLEARANCES

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		5.03

*COMMUNICATION/SIGNAL TYPE ATTACHMENT
TELEPHONE CABLE
C.A.T.V. CABLE
ALARM CABLE (FIRE, POLICE, WATER TOWER LEVEL, ETC.)
TRAFFIC SIGNAL CONTROL CABLE
TELEGRAPH CABLE
PUBLIC OR PRIVATE COMMUNICATION CABLE

NOTE:
WHEN C.A.T.V. AND TELEPHONE ARE ATTACHED TO POLE C.A.T.V.'S PREFERRED POSITION IS ABOVE TELEPHONE (12" MIN.). IF OTHER COMMUNICATION/SIGNAL TYPE CABLES ARE ATTACHED TO POLE WITH C.A.T.V. AND/OR TELEPHONE, THEIR POSITION SHALL BE MUTUALLY AGREED UPON.
12" MIN. SPACING SHOULD BE MAINTAINED BETWEEN CABLES. C.A.T.V. AND TELEPHONE DROPS CAN BE LESS THAN 12" FROM OTHER CABLES. DROPS SHALL BE 40" BELOW POWER NEUTRAL OR SECONDARY AT POLE.



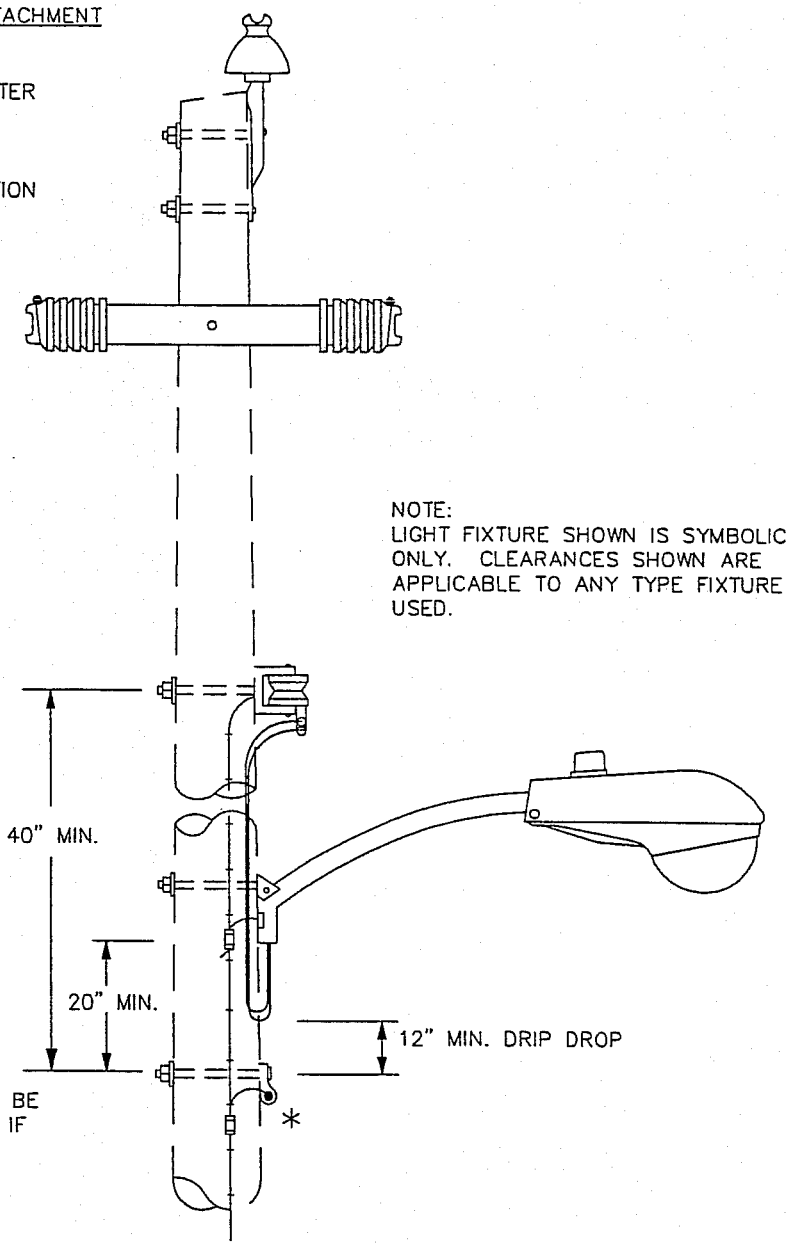
ALL CABLES SHALL BE ON SAME SIDE OF POLE.

MESSENGER STRAND SHALL BE BONDED TO POLE GROUND, IF PRESENT.

MULTIPLE COMMUNICATION/ SIGNAL TYPE ATTACHMENT

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		5.04

*COMMUNICATION/SIGNAL TYPE ATTACHMENT
- TELEPHONE CABLE
- C.A.T.V. CABLE
- ALARM CABLE (FIRE, POLICE, WATER TOWER LEVEL, ETC.)
- TRAFFIC SIGNAL CONTROL CABLE
- TELEGRAPH CABLE
- PUBLIC OR PRIVATE COMMUNICATION CABLE



NOTE:
LIGHT FIXTURE SHOWN IS SYMBOLIC ONLY. CLEARANCES SHOWN ARE APPLICABLE TO ANY TYPE FIXTURE USED.

MESSENGER STRAND SHALL BE BONDED TO POLE GROUND, IF PRESENT.

COMMUNICATION/SIGNAL TYPE ATTACHMENT CLEARANCE FROM OUTDOOR LIGHT

POWER ENGINEERING ASSOCIATES, INC. MARIETTA, GA.	REVISIONS	ELECTRIC CITIES OF GEORGIA
DATE: MARCH, 1991		5.05